Vol. 886 Number 4

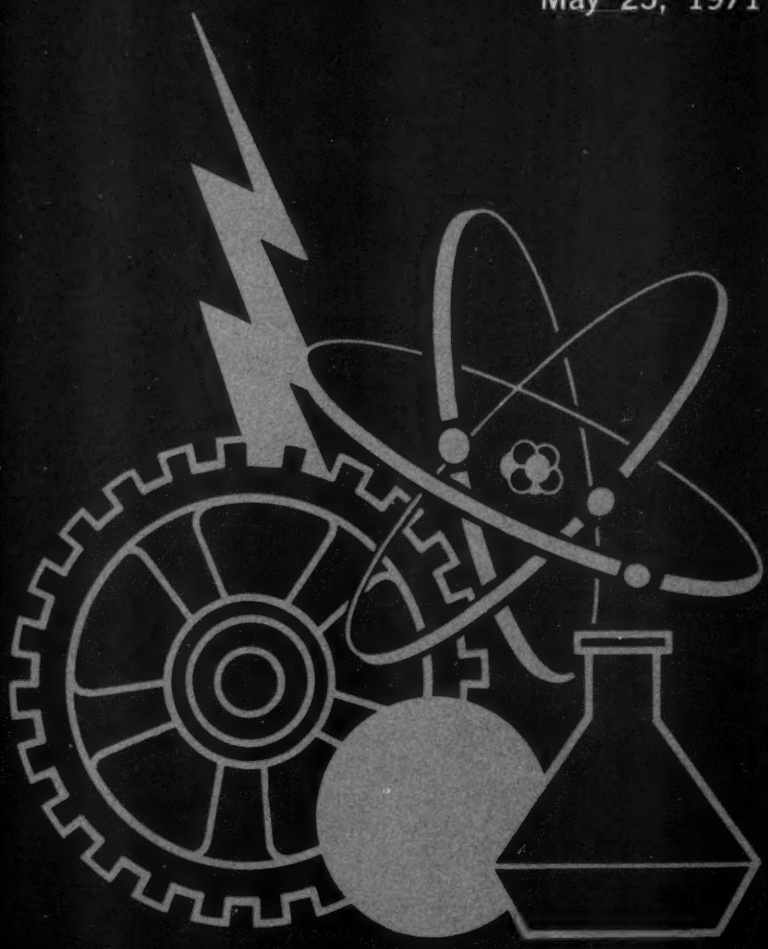
OFFICIAL GAZETTE

of the
UNITED STATES PATENT OFFICE

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

May 25, 1971



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

U. S.
DEPARTMENT
OF COMMERCE

Patent
Office

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

May 25, 1971 Volume 886 Number 4

CONTENTS

Issue of May 25, 1971 637

Patents and Trademark Notices

Deposit of Microorganisms 638

Patent Suits 638

Patent Notices

Disclaimers 640

Service by Publication 640

Certificates of Correction for the Week of May 25, 1971 640

Condition of Patent Applications 641

Reissue Patents Granted 642

Patents Granted

General and Mechanical 643

Chemical 897

Electrical 948

Design Patents Granted 1031

Index of Patentees . . . . . PI 1

Indices of Reissues and Designs . . . . . PI 46

Classification of

Patents (Including Reissues) . . . . . PI 47

Designs . . . . . PI 49

Geographical Index of Residence of Inventors

Patents (Including Reissues) . . . . . PI 50

Designs . . . . . PI 52

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $89.00 per annum, foreign mailing $22.25 additional; single copies $2.00 each.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $17.00 per annum, foreign mailing $4.25 additional; single copies 40 cents each.

CIRCULARS OF GENERAL INFORMATION concerning PATENTS or TRADEMARKS, price 15 cents each.

PRINTED COPIES OF PATENTS are furnished by the Patent Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS and DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.O.

PATENT OFFICE NOTICES

Deposit of Microorganisms

Some inventions which are the subject of patent applications depend on the use of microorganisms which must be described in the specification in accordance with 35 U.S.C. 112. No problem exists when the microorganisms used are known and readily available to the public. When the invention depends on the use of a microorganism which is not so known and readily available, applicants must take additional steps to comply with the requirements of Section 112.

In re Argoudelis et al., 168 USPQ 99 (CCPA, 1970), accepted a procedure for meeting the requirements of 35 U.S.C. 112. Accordingly, the Patent Office will accept the following as complying with the requirements of Section 112 for an adequate disclosure of the microorganism required to carry out the invention:

(1) The applicant, no later than the effective U.S. filing date of the application, has made a deposit of a culture of the microorganism in a depository affording permanence of the deposit and ready accessibility thereto by the public if a patent is granted, under conditions which assure (*a*) that access to the culture will be available during pendency of the patent application to one determined by the Commissioner to be entitled thereto under Rule 14 of the Rules of Practice in Patent Cases and 35 U.S.C. 122, and (*b*) that all restrictions on the availability to the public of the culture so deposited will be irrevocably removed upon the granting of the patent;

(2) Such deposit is referred to in the body of the specification as filed and is identified by deposit number, name and address of the depository, and the taxonomic description to the extent available is included in the specification; and

(3) The applicant or his assigns has provided assurance of permanent availability of the culture to the public through a depository meeting the requirements of (1). Such assurance may be in the form of an averment under oath or by declaration by the applicant to this effect.

A copy of the applicant's contract with the depository may be required by the Examiner to be made of record as evidence of making the culture available under the conditions stated above.

RICHARD A. WAHL,
Assistant Commissioner.

Apr. 29, 1971.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,611,813, Sharpless and Eichert, Jr. MAGNETIC DATA STORAGE SYSTEM, **filed** Nov. 20, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c2916, *Technitrol, Inc.* v. *Digital Equipment Corporation.*

2,706,286, Stepath, Krumm and Ross, CUTTING AND GOUGING ELECTRODE HOLDER AND METHOD, **filed** Dec. 14, 1970, D.C., N.D. Tex (Dallas), Doc. CA-3-4362-D, *Arcair* v. *James T. Jeter, Jr., doing business as J.W. Mfg. Co. and Automation Engineering & Mfg. Co.*

2,734,226, W. H. Willert, INJECTION MOLDING APPARATUS, **filed** Nov. 23, 1970, D.C. Conn. (New Haven), Doc. 14149, *Egan Machinery Company and William H. Willert* v. *Polymer Machinery Corp.*

2,742,327, T. Marks, FULLY AUTOMATIC MACHINE FOR MAKING BRUSHES, **filed** Jan. 12, 1971, D.C., S.D.N.Y., Doc. 71-C-152, *American Technical Industries, Inc.* v. *Poloron Products Inc.*

2,786,741, Huebler and Beggs, METALLURGICAL GAS GENERATOR, **filed** Dec. 14, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c3119, *Sunbeam Equipment Corp.* v. *Midland Ross Corp.*

2,824,315, G. D. McKenny, RELEASABLE COUPLING DEVICE, **filed** July 28, 1967, D.C., W.D. Wash. (Seattle), Doc. 7294, *C. J. Hendry Company* v. *Manolides, Inc.* Dismissed, Jan. 29, 1970.

2,901,449, S. W. Bradstreet, METHOD AND COMPOSITIONS FOR FLAME SPRAYING, **filed** July 17, 1968, D.C., N.D. Ill. (Chicago), Doc. 68c1320, *Continental Coatings Corp.* v. *Metco, Inc. et al.* Motion for summary judgment granted to defendants in part and complaint and counterclaim are dismissed, Jan. 22, 1971.

3,036,642, O. D. Twist, FAN; **D. 187,272,** same, **filed** Dec. 22, 1970, D.C., W.D. Wash. (Tacoma), Doc. 4220, *Flex-A-Lite Corporation* v. *Hurricane Automotive Products.*

3,205,708, J. H. Andresen, Jr., COMBINED AIRSPEED AND MACH INDICATOR; **3,435,675,** E. P. Knapp, MAXIMUM ALLOWABLE AIRSPEED POINTER, **filed** July 4, 1970, D.C.N.J. (Newark), Doc. 891-70, *Lear Siegler, Inc.* v. *Intercontinental Dynamics Corp.* Stipulation and order of dismissal, Jan. 5, 1971.

3,210,053. (See D. 207,293.)

3,229,413, H. K. Bross, TOYS AND RACK ACTUATING MEANS THEREFOR; **3,229,543,** same, RACKS; **D. 205,459,** same, FLEXIBLE PULL STRAP FOR AN AERIAL TOY OR THE LIKE, **filed** Dec. 24, 1970, D.C.N.J. (Newark), Doc. 1728-70, *Kenner Products Company* v. *Helmut Karl Bross and Frank T. Johmann.*

3,229,543. (See 3,229,413.)

3,272,297, S. G. Bean, FEEDER OF NON-FLOWING MATERIAL, **filed** Feb. 3, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c322, *Food Packaging, Inc.* v. *U.S. Sugar Company, Inc. et al.*

3,275,316, G. V. Cleary, Jr. INSERT FOR NEWSPAPERS, **filed** Jan. 18, 1971, D.C., N.D. Ill (Chicago), Doc. 71c134, *Free Standing Stuffer, Inc.* v. *Parent's Magazine Enterprises.*

3,297,831, W. O. Stanton, MAGNETIC STEREOPHONIC PHONOGRAPH PICKUP, **filed** Jan. 5, 1971, D.C., S.D.N.Y., Doc. 71-C-31, *Pickering & Company Inc.* v. *Brooks Radio and Television Corporation.*

3,313,443, Dial, Habegger and Kays, FLOATING COVER FOR A LIQUID STORAGE RESERVOIR, **filed** Jan. 4, 1971, D.C.N.J. (Newark), Doc. 1-71, *Globe Linings, Inc. and Howard D. Webb* v. *Revere Plastics, Inc.*

3,319,872, Beckman and Beerbohm, MAILER, **filed** Jan. 12, 1971, D.C., W.D. Pa. (Pittsburgh), Doc. 71-46, *2B System Corporation* v. *Accounting and Business Forms, Inc. and the County of Allegheny.*

3,324,954, W. J. Westendorf, LOADER DEVICE AND METHOD OF MOUNTING SAME ON TRACTOR, **filed** Dec. 23, 1970, D.C., N.D. Iowa (Sioux City), Doc. 70-C-3061-W, *Walter J. Westendorf* v. *Sioux Steel Company.*

3,435,675. (See 3,205,708.)

3,445,324, Curler and Lineburg, FLEXIBLE WRAPPING MATERIAL, **filed** Jan. 8, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c53, *Curwood, Inc.* v. *Standard Packaging Corporation.*

3,446,892, D. M. Stout, IMMOBILIZING INSETS BY SUDDEN REDUCTION OF BODY TEMPERATURE, **filed** Feb. 1, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c286, *Whitmore Research Laboratories, Inc.* v. *Chase Products Co., Universal Safety Equipment Co.*

3,450,212, A. G. Sylvester, MULTIPLE TOOTH SUBSOIL PLOW, **filed** Jan. 11, 1971, D.C., N.D. Tex (Lubbock), Doc. CA-5-866, *Cline Industries, Inc.* v. *Sam Stevens, Inc.*

3,464,424, F. D. Buzzelli, METHOD FOR RETAINING HAIR, **filed** Jan. 12, 1971, D.C., E.D. Mich. (Detroit), Doc. 35919, *Frank Buzzelli* v. *Minnesota Mining & Mfg. Co.*

3,486,127, Back and Garelick, INSTRUMENTATION CIRCUIT WITH D-C AMPLIFIER HAVING TEMPERATURE STABILIZATION, **filed** Dec. 29, 1970, D.C., N.D. Ohio (Cleveland), Doc. C 70-1199, *Acromag, Incorporated* v. *Transmation, Inc.*

3,494,056, B. J. Elzer, DISPLAY DEVICE, **filed** Dec. 23, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c3216, *Grafika Commercial Arts Inc.* v. *Parisian Novelty Co. Inc. and Joseph Mfg. Co.*

3,498,485, B. L. Godbersen, BOOM AND FORK LIFT APARATUS, filed Oct. 29, 1970, D.C., N.D. Ind. (South Bend), Doc. 70–S–153, *Midwest Industries, Inc.* v. *Freeman Industries Corporation*. Dismissed upon plaintiff's motion without prejudice, Nov. 17, 1970.

3,515,087, R. S. Stuart, PLANING BOAT, filed Jan. 4, 1971, D.C., S.D. Fla. (Miami), Doc. 71–5–C–WM, *Penn Yan Boats, Inc.* v. *Sea Lark Boats, Inc. et al.*

Re. 24,017, J. A. Henricks, METHOD OF COATING AND DRAWING METAL AND COMPOSITION THEREFOR, filed July 21, 1965, D.C. Del. (Wilmington), Doc. 3058, *Devex Corporation et al.* v. *General Motors Corporation*. (Transferred from Northern District of Illinois, E.D.) Final judgment, defendant has not infringed claim 4 of the patent. The amended complaint is dismissed with prejudice, Jan. 13, 1971.

Re. 24,730, C. E. Reeves, PORTABLE SIGNALLING DEVICE, filed Dec. 28, 1970, D.C., N.J. (Newark), Doc. 1732–70, *Falcon Safety Products, Inc.* v. *Wagner Electric Sales Corp.*

Re. 24,899, B. K. Green, OIL-CONTAINING MICROSCOPIC CAPSULES AND METHOD OF MAKING THEM, filed Apr. 18, 1968, D.C. Del. (Wilmington), Doc. 3518, *The National Cash Register Company* v. *Minnesota Mining & Manufacturing Company, Inc., and Charles Pfizer & Co., Inc. (Coty Div.)*. Parties reached a compromise and agreement, therefore, it is ordered adjudged and decreed as follows: Action dismissed without prejudice, Jan. 7, 1971.

D. 187,272. (See 3,036,642.)

D. 205,459. (See 3,229,413.)

D. 207,293, C. W. Ferm, SEWAGE SEPTIC TANK; **D.207,294**, same, SEWAGE SEPTIC TANK; **3,210,053**, C. F. Boester, AERATOR STRUCTURE, filed Jan. 13, 1971, D.C., M.D. Pa. (Scranton), Doc. C–71–23, *Cromaglass Corporation* v. *Carl Ferm, Fred R. Sechler and Plast-A-Form Corporation*.

D. 207,294. (See D. 207,293.)

Disclaimers

Re. 26,656.—*Raymond W. Guzzardo*, McHenry, Ill. CONTAINER FABRICATING AND ORIENTING APPARATUS. Patent dated Sept. 2, 1969. Disclaimer filed Sept. 17, 1970, by the assignee, *E. M. Melahn, doing business as Northern Illinois Machine Company.*

Hereby enters this disclaimer to claims 1 to 20, inclusive, of said patent.

Re. 26,969.—*Patrick J. O'Shea*, Hazel Crest, Ill. METAL CASTING PROCESS. Patent dated Oct. 20, 1970. Disclaimer filed Jan. 11, 1971, by the assignee, *Nalco Chemical Company.*

Hereby enters this disclaimer to claim 14 of said patent.

3,364,260.—*Saul L. Neidleman*, Highland Park, N.J. 4N-DEMETHYL-4N-ETHYL TETRACYCLINES. Patent dated Jan. 16, 1968. Disclaimer filed Sept. 14, 1970, by the assignee, *E. R. Squibb & Sons, Inc.*

Hereby enters this disclaimer to claim 1 of said patent.

3,401,866.—*Everett C. Johnson*, North Riverside, and *Donald G. Meier*, Tinley Park, Ill. CONTAINER WITH SELF-LOCKING LID. Patent dated Sept. 17, 1968. Disclaimer filed Dec. 21, 1970, by the assignee, *Owens-Illinois, Inc.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,422,656.—*Howard S. Orr.* Upper St. Clair Township, Allegheny County, Pa., and *Anthony D. Reinhardt*, South Holland, Ill. METHOD OF ROLLING SLABS IN PLANETARY MILL. Patent dated Jan. 21, 1969. Disclaimer filed Jan. 22, 1971, by the assignee, *United States Steel Corporation.*

Hereby enters this disclaimer to claim 1 of said patent.

3,444,134.—*Anthony C. Soldatos*, Kendall Park, N.J. PHENOLATED POLYMERS OF ISOPRENE. Patent dated May 13, 1969. Disclaimer filed Jan. 22, 1971, by the assignee, *Union Carbide Corporation.*

Hereby enters this disclaimer to claims 1 through 6 of said patent.

3,515,796.—*Roger J. Schoerner*, Carrollton, Ga. INSULATED TELEPHONE CABLE. Patent dated June 2, 1970. Disclaimer filed May 25, 1970, by the assignee, *Southwire Company.*

Hereby disclaims the terminal portion of the term of said patent subsequent to May 19, 1987.

3,533,812.—*Howard B. Cummings* and *Ralph Gibson*, New Castle, Pa. PROCESS FOR THE MANUFACTURE OF CERAMIC ARTICLES, AND PRODUCT DERIVED FROM SUCH PROCESS. Patent dated Oct. 13, 1970. Disclaimer filed Dec. 23, 1970, by the assignee, *Interpace Corporation.*

Hereby enters this disclaimer to claims 10, 24, 25 and 26 of said patent.

3,567,080.—*Mack S. Johnston*, Rolling Hills, Calif. TAPPING DEVICE FOR BEER KEGS AND THE LIKE. Patent dated Mar. 2, 1971. Disclaimer filed Sept. 29, 1970, by the assignee, *Republic Corporation.*

Hereby disclaims the terminal portion of the term of said patent subsequent to Jan. 25, 1983.

Service by Publication

Richard L. Marshall

In accordance with Rule 47 of the Rules of Practice of the United States Patent Office in Patent Cases, notice is hereby given of the filing on April 24, 1969, of an application for patent entitled "Rifled Bore Construction for a Gun Barrel," on behalf of Richard L. Marshall, whose last known address was 1342 Glenarm Place, Englewood, Colorado. The application was made in compliance with Rule 47(a) and 35 U.S.C. 116 by joint inventor Anthony A'Costa without execution by the said Richard L. Marshall. Notice of the filing directed to the above noted address has been returned undelivered.

Any action to be taken by the said Richard L. Marshall, or if he is deceased, his legal representatives or heirs, in connection with the said application must be taken within thirty days of the publication of this notice.

RICHARD A. WAHL,
Assistant Commissioner of Patents.

Certificates of Correction for the Week of May 25, 1971

Re. 27,018	3,542,809	3,553,282	3,559,348
Re. 27,059	3,543,385	3,553,425	3,559,350
3,351,164	3,543,833	3,553,573	3,559,511
3,442,962	3,543,923	3,553,964	3,559,538
3,445,181	3,544,431	3,554,041	3,559,557
3,452,301	3,545,819	3,554,698	3,559,655
3,454,401	3,546,190	3,554,993	3,559,816
3,472,933	3,546,378	3,554,996	3,559,818
3,475,564	3,546,832	3,555,038	3,559,891
3,478,469	3,548,561	3,555,271	3,560,429
3,479,258	3,548,860	3,555,864	3,560,718
3,480,523	3,548,991	3,556,063	3,560,931
3,489,696	3,549,601	3,556,142	3,561,267
3,500,966	3,549,625	3,556,159	3,561,313
3,507,872	3,549,787	3,556,218	3,561,498
3,522,034	3,549,945	3,556,230	3,561,591
3,522,160	3,550,298	3,556,508	3,561,843
3,523,078	3,550,414	3,556,637	3,562,212
3,525,733	3,550,549	3,556,669	3,562,314
3,525,958	3,550,730	3,556,795	3,562,448
3,533,647	3,551,249	3,556,890	3,562,549
3,534,030	3,551,355	3,557,033	3,562,635
3,534,574	3,551,466	3,557,068	3,563,939
3,537,577	3,551,677	3,557,099	3,564,843
3,537,930	3,551,748	3,557,393	3,565,328
3,538,209	3,551,770	3,557,505	3,565,399
3,538,668	3,552,232	3,557,564	3,565,597
3,538,920	3,552,258	3,557,605	3,565,847
3,539,911	3,552,514	3,557,841	3,566,173
3,540,015	3,552,657	3,557,962	3,566,484
3,540,103	3,552,672	3,558,612	3,566,675
3,541,042	3,552,970	3,558,663	3,567,637
3,541,060	3,553,179	3,558,853	
3,541,172	3,553,194	3,558,922	
3,541,490	3,553,198	3,558,966	

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 4, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-02-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-02-69
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-10-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-03-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-17-69
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	8-17-70
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	12-11-69
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	3-13-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-03-70
PHYSICS, GROUP 260—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	1-21-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	6-03-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	3-09-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	1-02-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	2-02-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—C. F. GAREAU, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	6-08-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods: Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	1-06-70

Expiration of patents: The patents within the range of numbers indicated below expire during May 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,677,129 to 2,679,644, inclusive
Plant Patents..... Numbers 1,274 to 1,281, inclusive

REISSUES

MAY 25, 1971

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

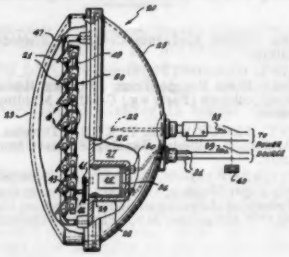
27,125
MEANS FOR REMOVING GLARE OF A LIGHT BEAM

John F. Steel, P.O. Box 401, Palm Beach, Fla. 33480

Original No. 3,333,094, dated July 25, 1967, Ser. No. 421,742, Dec. 14, 1964, which is a continuation-in-part of Ser. No. 406,973, Oct. 26, 1964. Application for reissue Jan. 21, 1969, Ser. No. 802,277

Int. Cl. F21v *11/04*

U.S. Cl. 240—46.11 9 Claims



A sealed-beam headlamp includes a coaxial lens and reflector, and an incandescent filament which generates a light source. A transparent plate is interposed between the filament and the lens to divide the headlamp into a hermetically sealed, evacuated filament compartment and a non-evacuated louver compartment. A frame which is fixedly mounted in the louver compartment is maintained stationary with respect to the lens and the plate. A plurality of louvers are rotatably mounted in the frame, the louvers being spaced-apart and mechanically coupled for simultaneous rotation sequentially through a fully closed position and a fully open position. A drive mechanism cooperates with the louver coupling to rotate the louvers in unison at such rate that a beam of light passing through the headlamp lens appears uninterrupted.

Alternatively, the louvers may be mounted for oscillation rather than rotation or a suitable louver coupling device may be provided to rotate adjacent louvers in opposite directions.

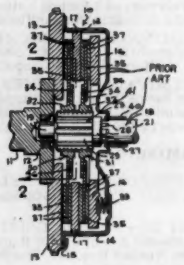
27,126
DUAL SPLINED SHAFT ASSEMBLY FOR A CLUTCH

Wayne P. Gingery, Harlan, Iowa, assignor to Super-Drive Products, Inc., Los Angeles, Calif.

Original No. 3,465,860, dated Sept. 9, 1969, Ser. No. 642,363, May 31, 1967. Application for reissue May 8, 1970, Ser. No. 35,835

Int. Cl. F16d *13/44, 13/58*

U.S. Cl. 192—70.13 8 Claims



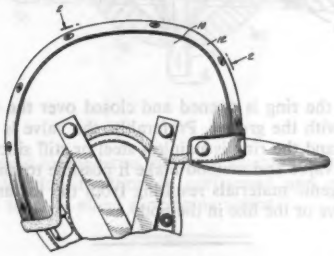
A dual splined sleeve which will protect the original shaft from damage due to high engine torque, and wherein greater lateral resistance is provided. *When the splines of the shaft become worn at their central portions, the dual splined sleeve is fitted over them so as to engage the shaft splines and extend beyond the worn portion. At least one disc member is provided with an internally splined hub and friction facing means on its outer portions, and the splined hub is fitted over the external splines of the sleeve so as to position the friction facing means for engagement by the clutch-actuating mechanism.*

PATENTS

GRANTED MAY 25, 1971

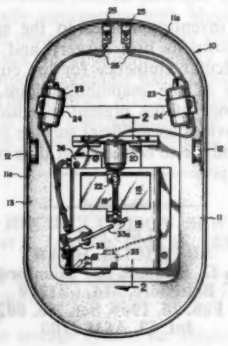
GENERAL AND MECHANICAL

3,579,637
PROTECTIVE HELMET OF ADJUSTABLE SIZE
Jackson Anthony Aileo, Carbondale, Pa., assignor to Gentex Corporation, Carbondale, Pa.
Filed Apr. 1, 1969, Ser. No. 812,073
Int. Cl. A42b *1/08*
U.S. Cl. 2—3 **10 Claims**



A protective helmet of adjustable size including a hollow shell adapated to receive the head of a wearer and made up of two complementary halves and a partially overlapping strip extending along their adjoining edges. The halves have, in their overlapped portions, a series of apertures elongated transversely to the strip. The strip has circular apertures aligned with the elongated apertures on the halves. Screws extend through the apertures and cooperate with nuts to hold the halves to the strip. When the screws are loosened, the halves can slide in relation to the strip over a distance limited by the length of the elongated apertures, thereby adjusting the size of the shell as required to fit the head of a particular wearer.

3,579,638
EYE-SHIELD OPERATING SYSTEM FOR WELDING HELMETS
Frank J. Davis and George Zahnor Edwards, Salt Lake City, Utah, assignors to Kedman Company, Salt Lake City, Utah
Filed Sept. 23, 1969, Ser. No. 860,210
Int. Cl. A61f *9/06*
U.S. Cl. 2—8 **9 Claims**



The eye-shield lens of a welding helmet is extended and retracted into and out of working position, respectively, by unidirectional rotation of a self-reversing worm working in a pawl attached to the lens frame. The worm is an extension of the drive shaft of a miniature electric motor powered by rechargeable batteries through circuitry arranged to provide maximum starting speed followed by reduced speed. Starting of the motor is conveniently controlled by a breath-operated switch and stopping, at the limits of lens travel, by respective limit switches. Battery recharging terminals are preferably provided as suspension hooks to engage with electric power terminals of a storage rack when the helmet is not in service.

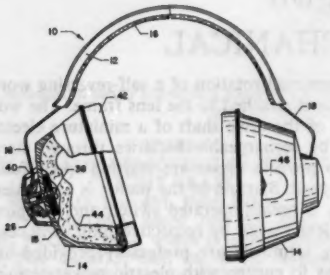
3,579,639
SUSPENDING DEVICE FOR GARMENTS
James M. Faulkner, Laurel, Del.
(Box 231, Georgetown, Del. 19947)
Filed Nov. 8, 1968, Ser. No. 774,244
Int. Cl. A41f *3/02, 5/00*
U.S. Cl. 2—117 **4 Claims**

Garment suspending device comprises pair of shoulder straps with fasteners connecting ends of straps together to form loop. Pair of intermediate adjustable straps is provided with one adjustable strap secured at one end thereof to each fastener. Terminal straps are connected at their mid portions to intermediate straps, and releasable attaching structure at ends of terminal straps secure suspending device to garment of type worn below waist. Suspending device is concealed by shirt or other outer upper garment.

3,579,640
HEARING PROTECTOR HEADSETS
Fred P. Beguin, Sturbridge, and Harry Dostourian, Worcester, Mass., assignors to American Optical Corporation, Southbridge, Mass.
Filed Feb. 11, 1970, Ser. No. 10,473
Int. Cl. A42b *1/06*
U.S. Cl. 2—209 **4 Claims**

Hearing protector headsets comprising an adjustable headband, sound-attenuating earcups, and attachment and supporting means for rotatably supporting and universally slidably tilting each earcup for adjustment of headband and earcups as needed while being worn. The adjustment and supporting means for each earcup includes at each end portion of the headband a spherically-shaped aperture

formation through which parts of the attachment and supporting means extend and against the sides of which



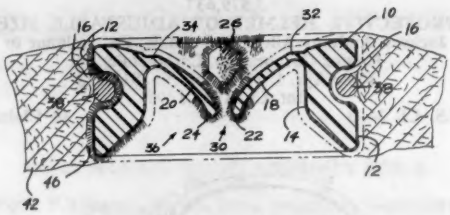
spherically-shaped end clamping members of selected kind and shape frictionally engage.

3,579,641
END CLIP FOR LOAD CARRYING BELT
Wesley S. Larson, Hazardville, Conn., assignor to the United States of America as represented by the Secretary of the Army
Filed Oct. 9, 1969, Ser. No. 864,992
Int. Cl. A41f *9/02, 19/00*
U.S. Cl. 2—325 **4 Claims**

An end clip for attachment to an end of load carrying belt to serve as means for varying the length of the belt. The end clip has prongs formed on an outer surface thereof, the prongs being releasably engagable with eyelets in the belt forming a loop in the belt of variable size which carries a portion of means for fastening the belt about the body. The end clip is preferably made of rigid plastic material with pins and openings to receive the pins formed as elements thereof during molding of the end clip, the pins serving to affix the end clip to an end of the belt.

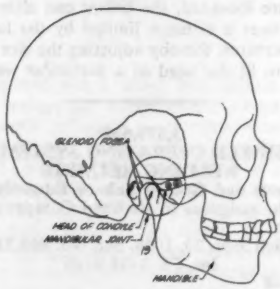
3,579,642
HEART VALVE ASSEMBLY AND METHOD OF IMPLANTING IN THE BODY
Bart T. Hefferman, 604 Laurel, Wilmette, Ill. 60091, and Efrem M. Ostrowsky, 2775 Fort Sheridan Ave., Highland Park, Ill. 60035
Filed Apr. 15, 1968, Ser. No. 721,360
Int. Cl. A61f *1/22*
U.S. Cl. 3—1 **4 Claims**

A check valve for use in a human heart or the like in which the body portion contains check valve means on the inside thereof and in which the outer wall portions contain a groove around the periphery thereof to receive a fastener in the form of a snap ring or the like. A method is described in which a membrane is opened, a stiff but resilient fastener such as a snap ring is sewn in place therein, closely adjacent the edges of the membrane which define the opening therein, and a check valve such as that described is napped into place in the opening in the mem-



brane as the ring is opened and closed over the valve, in registry with the groove. Preferably, the valve is a plastic material and the ring is stainless steel or stiff silicone rubber. The valve and method make it possible to immobilize thrombogenic materials resulting from the inclusion of a heart valve or the like in the body.

3,579,643
ARTIFICIAL ARTICULAR EMINENCE FOR THE MANDIBULAR JOINT
Douglas H. Morgan, 1700 Lila Lane, La Canada, Calif. 91011
Filed Dec. 12, 1968, Ser. No. 783,334
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **6 Claims**

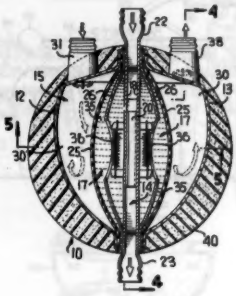


The present invention relates to the specialized field of dentistry known as oral surgery and particularly to an artificial articular eminence for the cure of disorders or dysfunctions of the mandibular joint. The artificial articular eminence of the present invention is surgically applied and provides an artificial surface for the condylar head of the mandible to contact and slide upon in opening and closing the jaw.

3,579,644
ARTIFICIAL HEART
William G. Esmond, 537 Stamford Road, Baltimore, Md. 21229
Filed Feb. 26, 1969, Ser. No. 802,580
Int. Cl. A61f *1/00*
U.S. Cl. 3—1 **8 Claims**

This disclosure relates to an artificial heart which is so constructed whereby it may be mounted in the human body and permanently connected to the blood vessels of that body with the heart being powered by an external

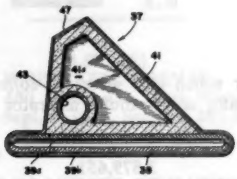
source. The heart makes use of a low boiling point liquid and a heating coil which is periodically actuated so as to effect boiling of the liquid, followed by the rapid cooling of the liquid to condense the same whereby an expansion and contraction function is performed and constantly repeated so as to effect a pumping action.



3,579,645
CARDIAC VALVE OCCLUDER HAVING A DENSITY APPROXIMATELY EQUAL TO BLOOD

Jack C. Bokros, San Diego, Calif., assignor to Gulf Energy & Environmental Systems, Inc.

Filed Apr. 30, 1969, Ser. No. 820,361
Int. Cl. A61f 1/22
U.S. Cl. 3—1 10 Claims



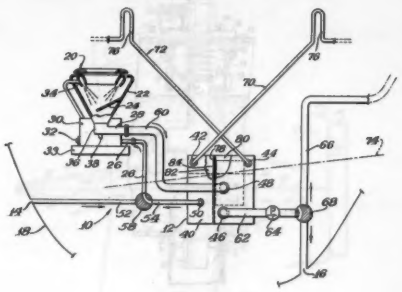
An improved movable occluder for intermittently opening and closing the aperture in a heart valve. The occluder has an inner substrate portion and an exterior coating of a material, such as isotropic pyrolytic carbon, that is chemically nonreactive with blood. Although the exterior coating material has a density greater than blood, the substrate has an apparent density less than blood so that the composite occluder has a density that approximates blood. The substrate may be hollow or made of a porous material. An intermediate layer of low density material may be employed to deaden the sound.

3,579,646
SHIPBOARD RECIRCULATION SEWAGE SYSTEM

Robert L. Lekberg, 4040 W. 123rd St., Alsip, Ill. 60658

Filed May 16, 1968, Ser. No. 729,774
Int. Cl. E03d 1/00; E03f 5/10
U.S. Cl. 4—10 11 Claims

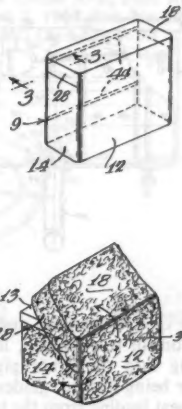
Recirculation sewage system for shipboard use having a holding tank which enables the toilet flushing liquid to be re-cycled following removal of sizable particulate matter therefrom in the tank. The tank includes: a chamber part which receives incoming waste discharged by the toilet and in which heavier solids settle out; a longitudinal baffle screen which is self cleaning due to ship motion and which screens out other solids; and a pick up chamber into which the screened liquid is admitted and which has a float-mounted swinging suction pipe through which only surface liquid is drawn from the tank.



3,579,647
TOILET TANK COVER

William L. Nielson, Janesville, Wis., assignor to Monterey Mills, Inc., Janesville, Wis.

Filed Feb. 11, 1969, Ser. No. 798,386
Int. Cl. B65b 11/00; B65d 65/02; A47k 17/00
U.S. Cl. 4—1 5 Claims



A one piece toilet tank cover wherein the top cover is integral with the side wall cover only along the front edge thereof so that the tank top may be removed easily without disturbing the side wall cover, which, at the same time, maintains a trim tailored appearance.

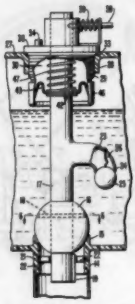
3,579,648
COMMODE FLUSHING MECHANISM

Walter K. Owens, P.O. Box 5641, Pensacola, Fla. 32505

Filed Sept. 9, 1968, Ser. No. 758,366
Int. Cl. E03d 1/34
U.S. Cl. 4—52 4 Claims

A highly compact, low cost, pressure flushing mechanism for commodes suitable for initial installations or replacement kits within existing flush tanks of the gravity type. The mechanism or plural mechanisms may also be

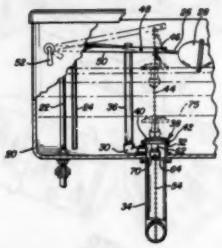
enclosed within a wall by virtue of its compactness. The maximum effect of city water main pressure is utilized for flushing without the need for oversized piping or expensive flush valves.



3,579,649
TOILET TANK AND GUIDE FOR FLUSH CONTROL VALVE

Arthur M. Dyer, 423 N. Graves, El Cajon, Calif. 92020

Filed Nov. 13, 1968, Ser. No. 775,313
Int. Cl. E03d *1/34*
U.S. Cl. 4—56 **7 Claims**



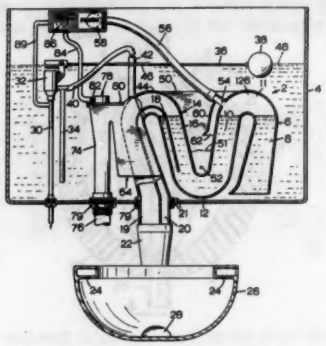
A combination of a toilet tank and a movable baffle below the flush control valve which, in conjunction with a chain extending into the drain pipe and under the influence of water being flushed, guides a float type valve toward the valve seat leading from the tank.

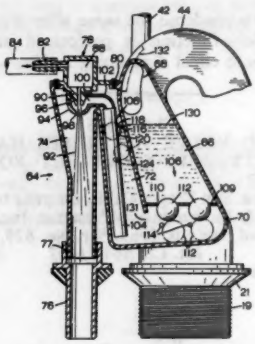
3,579,650
VENTING DEVICE FOR TOILETS

Frank Philip Sloan, Toronto, Ontario, Canada, assignor to Aquair Corporation Limited, Nassau, Bahamas

Filed Mar. 11, 1969, Ser. No. 806,164
Int. Cl. E03d *9/04*
U.S. Cl. 4—72 **11 Claims**

A device for sucking bathroom air through the rim holes of a toilet and for venting such air to a sewer. The device has a water trap preventing odor travel from the sewer to the room, an aspirator to empty the trap during use to permit air flow, and an inlet leg connected to the toilet flushing conduits at a location to be refilled by water flowing to the bowl during a flush, so that the trap can be refilled even if mains water pressure fails during venting. A check valve in the venting device prevent water trap emptying during air pressure fluctuations. In an alternative embodiment, venting is through an odor removing filter which also serves to collect spray water from the aspirator and to muffle aspirator noise.

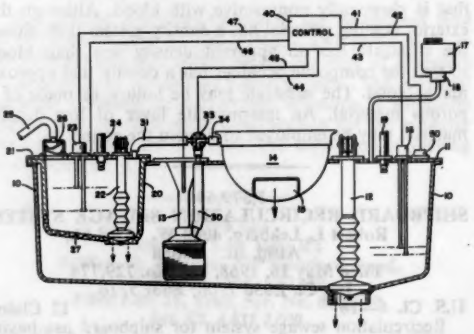




3,579,651
SELF-CONTAINED SEWERAGE SYSTEM

Ronald D. Russo, Wethersfield, Conn., assignor to Koehler-Dayton, Inc., Dayton, Ohio

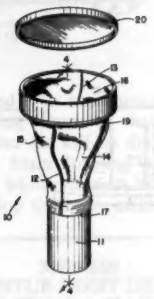
Filed Nov. 28, 1969, Ser. No. 880,725
Int. Cl. E03d *7/00;* **B01d** *33/02*
U.S. Cl. 4—78 **11 Claims**



In a self-contained sewerage system of the type in which the sewage is accumulated and stored within the system and recirculated for flushing, when the level of liquid and

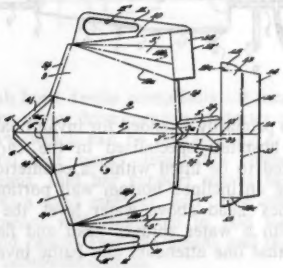
solid wastes within the collection tank reaches a preset level, the liquid wastes are withdrawn from the tank and pumped to an evaporative still where they are evaporated and vented from the system.

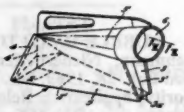
3,579,652
SANITARY URINE COLLECTOR
Richard E. Ericson, Keene, N.H., assignor to Elliot Laboratories, Inc., Fitzwilliam, N.H.
Filed Nov. 12, 1968, Ser. No. 774,696
Int. Cl. E03d *13/00*
U.S. Cl. 4—110 **27 Claims**



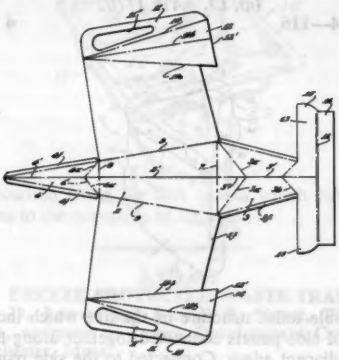
A funnel for use in the collection of urine specimens having a side wall of flexible material and two openings at either end and a rigid member coupled about one end to hold the opening in an open position and to provide a foundation for a sealing cap.

3,579,653
DISPOSABLE URINAL
Henry S. Kuhn, 609 Austin Ave., Park Ridge, Ill. 60068
Filed Sept. 5, 1969, Ser. No. 855,602
Int. Cl. A47k *11/00*
U.S. Cl. 4—110 **11 Claims**



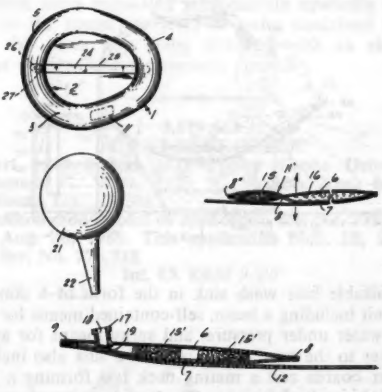


A disposable urinal comprising a container constructed of thin sheet stock such as relatively stiff paper or light board, having a bottom wall, side walls and end walls, and constructed adjacent the top thereof with a fluid inlet opening capable of assuming and retaining a generally circular configuration, the bottom and end walls being



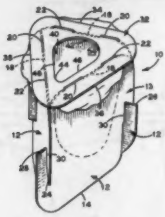
arranged for folding upon themselves to permit said side walls to be disposed in substantially parallel plane and the portions defining said inlet opening disposed substantially in such plane to provide a relatively flat compact package.

3,579,654
DISPOSABLE SELF-INFLATABLE BED PAN
Henry S. Kuhn, 609 Austin Ave., Park Ridge, Ill. 60068
Filed Sept. 5, 1969, Ser. No. 855,603
Int. Cl. A61g *9/00*
U.S. Cl. 4—113 **19 Claims**



A disposable self-inflatable bed pan comprising a body structure having an inflatable portion, constructed to produce a pan-shaped configuration when said portion is inflated, and activatable means arranged for reception in said inflatable portion and operable upon activation to effect inflation thereof, said activatable means comprising a material adapted to release a gas upon mixture with an activating liquid, with said material being disposed or disposable in said inflatable portion with said activating liquid being contained in said inflatable portion, out of contact with said material, or discharged into said inflatable portion at the time of usage.

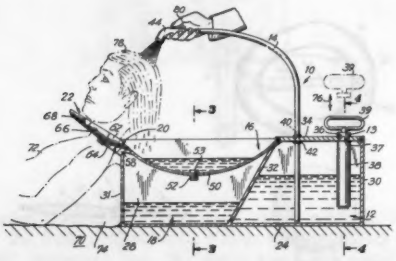
3,579,655
PORTABLE TOILET AND SINK STRUCTURES AND THE LIKE
Alan F. Sundberg, Amityville, N.Y.
(256 W. 21st St., New York, N.Y. 10011)
Filed Aug. 13, 1968, Ser. No. 752,308
Int. Cl. A47k *11/02*
U.S. Cl. 4—116 4 Claims



A portable toilet structure or the like which includes a plurality of side panels connected together along their respective adjacent edges. Connected to the side panels is a top panel having a through aperture. Surrounding the aperture and extending downwardly therefrom is a substantially waterproof bag. The bag is adapted to receive waste materials and the like thereby to provide a portable toilet or the like which may be assembled easily and quickly.

A method of fabricating the portable structure also is described.

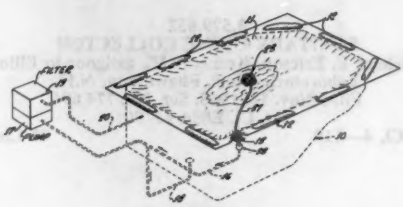
3,579,656
PORTABLE HAIR WASH SINK
Joseph S. Guarrasi, 39 Buckingham Road, Brooklyn, N.Y. 11226
Filed Feb. 20, 1969, Ser. No. 800,926
Int. Cl. A45d *19/00*
U.S. Cl. 4—159 7 Claims

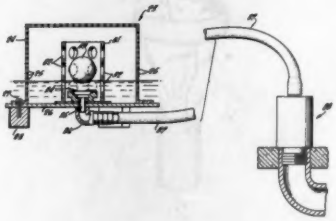


A portable hair wash sink in the form of a compact body unit including a basin, self-contained means for supplying water under pressure, and spray means for applying water to the head of the user. The sink also includes shoulder boards and a mating neck rest forming a yoke around the neck of the user. The boards and neck rest are dished to insure drainage into the sink basin.

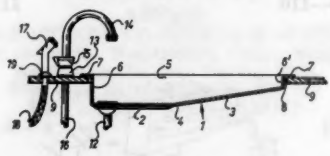
3,579,657
SWIMMING POOL COVER DRAIN
Salvatore J. Gurrieri, Sylmar, Calif., assignor to Anthony J. Pilarski, San Fernando, Calif.
Filed Sept. 4, 1969, Ser. No. 855,238
Int. Cl. E04h *3/18*
U.S. Cl. 4—172.12 14 Claims

A device for pumping water from a swimming pool cover including a first unit located on a swimming pool cover, the first unit having a float valve opened by water accumulating on the cover, the valve connecting to a second unit at the pool skimmer so that water from the cover is conducted to the inlet of the pump for the pool's circulation system. A valve member in the second unit is spring-biased to a closed position, but opened in response to suction upon the closing of the float valve, thereby providing normal system operation through the pool skimmer when no water is present on top of the cover.





3,579,658
BATH TUB FOR INVALIDS
Rita Marie Choquette, 1589 Gouin Blvd., East Montreal, Quebec, Canada
Filed Dec. 9, 1968, Ser. No. 782,059
Int. Cl. A47k *3/024*
U.S. Cl. 4—173 3 Claims

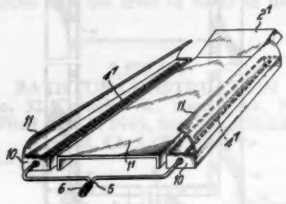


A bath tub primarily intended for invalid babies and to be used in hospitals specialized in the care of such babies, adapted to be fitted within a countertop opening and providing an inclined bottom wall portion to maintain the babies' head above water level, the tub being associated with a water sprayer head and flexible hose so arranged that one attendant can bathe invalid babies.

3,579,659
BUBBLE BATH DEVICE
Ludwig Baumann, Niederhelfenschwil, Switzerland
Filed Feb. 28, 1969, Ser. No. 803,170
Claims priority, application Belgium, Feb. 29, 1968, 711,465
Int. Cl. A61h *33/02*
U.S. Cl. 4—180 7 Claims

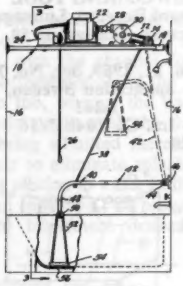
The invention provides a bubble bath device which is operated by compressed-air generating means such as a blower or a compressor and comprises a support for the

body of a user and at least one tubular conduit which is immersed in a foam forming emulsion and extends along at least part of the periphery of the support in a plane below the upper surface of the support. The tubular conduit, which may be a hose, has a plurality of very fine



lateral apertures and is in communication with the compressed-air generating means so that upon actuation of the latter compressed air will be discharged through the apertures into the foam forming emulsion to produce small bubble foam which rises on both sides of the support so as to envelop the body of the user from above.

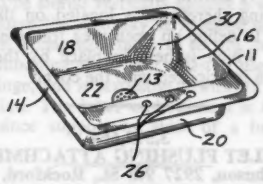
3,579,660
BATHTUB HOIST DEVICE
Willard H. Whitaker, 314 W. Tate St., Corinth, Miss. 38834
Filed Sept. 6, 1968, Ser. No. 758,052
Int. Cl. A47k *3/12*
U.S. Cl. 4—185 **3 Claims**



A bathtub hoist device comprising lift means including a support for motor drive means and starter means for the motor means which can be operated by a person using the lift, and seat means detachably connected to bar support means, said bar support means being pivotally connected to a fixed member, and cable means disposed on drum means and connected to said bar means for lowering and raising said bar means and the seat means detachably connected thereto.

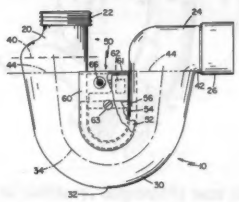
3,579,661
SINK
Millard H. Lien, Omaha, Nebr., assignor to Crane Co., Chicago, Ill.
Filed May 6, 1969, Ser. No. 822,152
Int. Cl. E03c *1/18*
U.S. Cl. 4—187 **2 Claims**

A plumbing fixture, such as a kitchen sink, wherein at least one corner has a radius of curvature which progressively increases from the top portion of the sink to the bottom portion. Such variation in radii enables the draining of kitchen utensils, such as pots or pans, which are of different diameter, by moving the utensil to the appro-



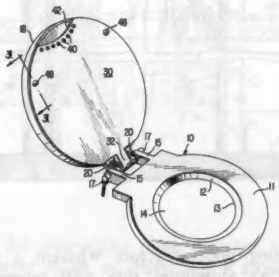
priate position along the sink corner which substantially conforms to the curvature of the utensil.

3,579,662
FREEZE PROTECTED WASTE TRAP
Robert D. Lowry and Russell B. Strout, Winchester, Mass., assignors to Lowry Development Corporation, Winchester, Mass.
Filed Mar. 20, 1969, Ser. No. 808,905
Int. Cl. E03c *1/284*
U.S. Cl. 4—206 **5 Claims**



A waste trap for water drains having a U-shaped conduit the legs of which have internal transverse cross sectional areas increasing progressively upwardly of said legs to the round top level of water contained in said trap the waste trap being provided with an electrical heater element and thermostatic control.

3,579,663
TOILET SEAT COVER
Robert Paul Leiter, 1219 Poplar Grove Drive, and Thomas G. Ware, 1029 N. Virginia Ave., both of Atlanta, Ga. 30306
Continuation-in-part of application Ser. No. 755,137, Aug. 26, 1968. This application Nov. 18, 1968, Ser. No. 776,318
Int. Cl. E03d *9/00*
U.S. Cl. 4—230 **8 Claims**

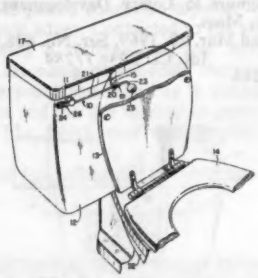


A toilet seat assembly having a cover pivotally secured to the seat member wherein there is provided a flat fo-

raminous bottom member which has a common pivot with the cover, and cooperating members on the cover and flat bottom such that they may be snapped together or pulled apart. A central island having a pair of diverging walls extending therefrom is located on the inside face of the cover to define an open area for receiving deodorant material which is held in place by the flat bottom member when interlocked with the cover.

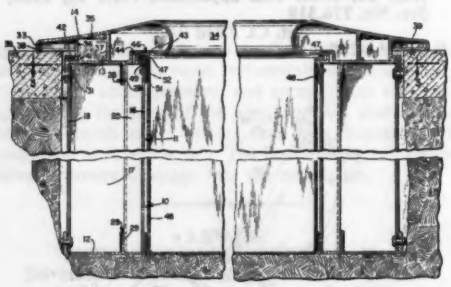
3,579,664
TOILET FLUSHING ATTACHMENT
Evar C. Johnson, 2927 9th St., Rockford, Ill. 61109
Filed July 28, 1969, Ser. No. 845,316
Int. Cl. E03d *5/04*
U.S. Cl. 4—250 **16 Claims**

A crank oscillatable by pressure rearwardly against the toilet seat lid turns a cross-shaft supportedly horizontally on the front of the flushing tank to operate

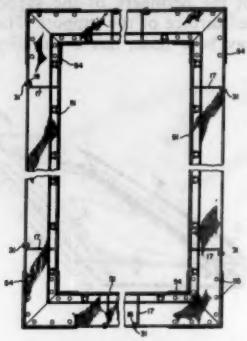


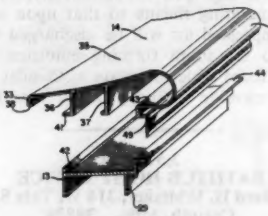
another crank on the other end of the cross-shaft. The latter crank has an eye on its outer end slipped loosely over the operating handle pivoted on the flushing tank, whereby to flush the toilet.

3,579,665
SWIMMING POOL STRUCTURE
Layle B. Barker, Henrico County, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Oct. 11, 1967, Ser. No. 674,391
Int. Cl. E04h *3/16*
U.S. Cl. 4—172.19 **11 Claims**



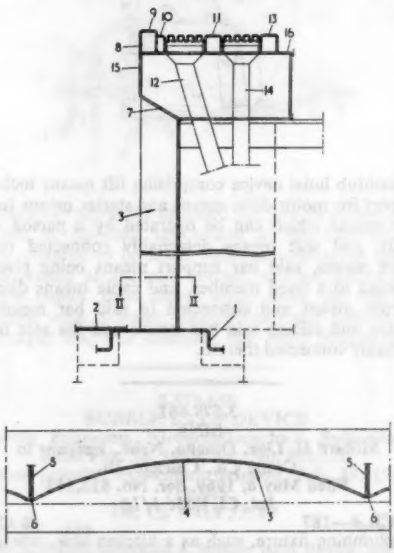
A swimming pool structure wherein a combination of interlocking aluminum side wall members are retained at their lower and upper ends in channels of lower and upper channel members, and a coping member surmounts the upper channel member. The coping and upper channel members are provided with mutually interlocking means, and a portion of the latter is formed





with a retaining channel to receive the edge of a pool liner.

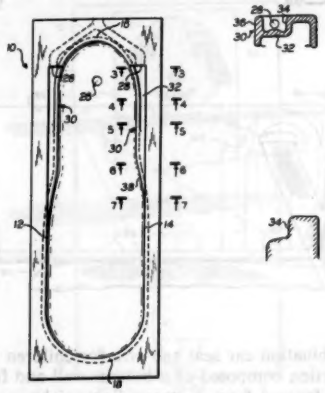
3,579,666
SWIMMING POOL
Ebbe Torsten Leonard Regebro, Lunnagardsvagen 15, and Karl-Olof Pettersson, Engagatan 50, both of Alvesta, Sweden
Filed Jan. 21, 1969, Ser. No. 792,609
Claims priority, application Sweden, Jan. 31, 1968, 1,241
Int. Cl. E04h *3/16*
U.S. Cl. 4—172.19 **9 Claims**



A swimming pool formed of plates of light weight metal such as aluminium. The walls of the pool are

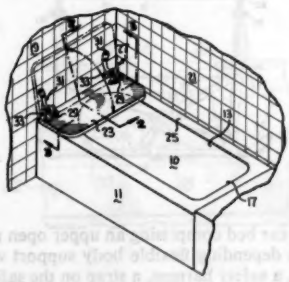
formed of elements which are concave vis a vis the interior of the pool and have no conventional splash channels but instead are provided with a peripheral portion extending outwardly from the top of the walls which include spaced apart inverted U-shaped beams with grids therebetween for receiving splash-over water. The innermost inverted U-shaped beam forms the edge of the pool which coincides with the level of water in the pool when it is filled.

3,579,667
BATHTUB CONSTRUCTION
Gino Giglio, 32 Cornelia St., New York, N.Y. 10014
Filed June 5, 1969, Ser. No. 830,642
Int. Cl. A47k *3/00*
U.S. Cl. 4—181 **4 Claims**



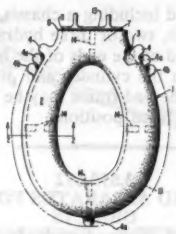
A bathtub formed with a water distribution channel arranged along one side of the tub adjacent the water entry to the tub, with the channel formed to guide the entering water horizontally along the upper edges of the side walls of the tub, whence the water falls along the side walls to continuously wash the side walls of the tub as the water is being admitted thereto, to prevent water falling through air to eliminate splashing, and to impart a swirling, mixing motion to water in the tub. The channel is formed with an inner wall of progressively decreasing height serving to implement desired direction of the water.

3,579,668
BATH AND SHOWER SEAT
Manuel Aronovitz, 913 Tampa St., Tampa, Fla. 33602
Filed Mar. 21, 1969, Ser. No. 809,102
Int. Cl. A47k *3/12*
U.S. Cl. 4—185 **7 Claims**



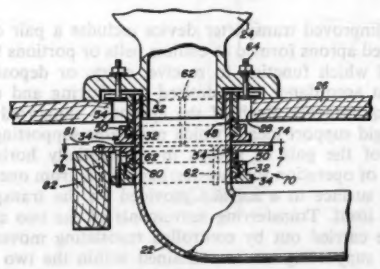
The seat of the present invention comprises an easily installed panel having a plastic finish which can be colored to match any bathroom color scheme. In one embodiment the seat, when in use, is supported in a horizontal position by the edges of the sides of a bathtub and is pivotable upward so as to be stored vertically against a wall above the tub. When stored the seat may be recessed in the wall and provided with a magnetic latch to secure the stored seat. In another embodiment the seat when in use, is supported by its own hinge, and is pivotable downward to its vertical storage position. The latter embodiment is suited for use in showers since support by sides of a bathtub is not required.

3,579,669
SANITARY SINGLE USE TOILET SEAT COVERS
Gideon Loewenstein, 39—37 46th St., Long Island City, N.Y. 11104
Filed Apr. 14, 1969, Ser. No. 815,550
Int. Cl. A47k *13/14*
U.S. Cl. 4—245 **4 Claims**



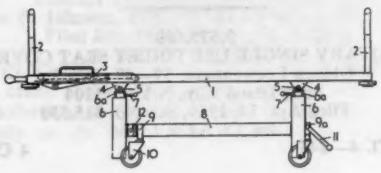
A package of sanitary, disposable seat covers is formed by superimposed seat covers adapted to be secured to the toilet seat. Each seat cover has a tab extending from its outer periphery, which tab is offset from the tabs of the adjacent seat covers, whereby the assembly of seat covers provides an arrangement of staggered tabs to thereby facilitate the gripping of a tab with the fingers.

3,579,670
PIPE CONNECTOR
Emil A. Frank, Long Beach, Calif., assignor of fractional part interest to Ronald L. Frank, Long Beach, Calif.
Filed July 2, 1968, Ser. No. 742,040
Int. Cl. F16l *37/04*
U.S. Cl. 4—252 **8 Claims**



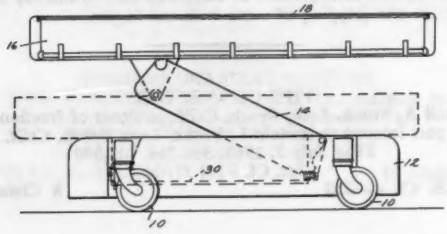
A device for connecting pipes together, connecting a pipe to a water closet or supporting a closet bend pipe which utilizes a collar squeezing a resilient gasket against the pipe to provide a water-tight, mechanical seal without the problems usually associated with the normal hot lead type of sealant.

3,579,671
ADJUSTABLE BED
Helmut Kötter, Schweicheln-Bermback, Germany, assignor to Joh. Stiegelmeyer & Co. G.m.b.H., Herford, Westphalia, Germany
Filed Feb. 19, 1969, Ser. No. 800,628
Claims priority, application Germany, June 7, 1968, P 17 66 522.4
Int. Cl. A61g 7/00, 7/10
U.S. Cl. 5—62 9 Claims



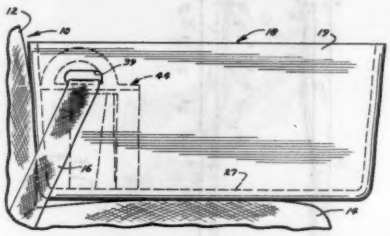
An adjustable bed including a chassis, a bed frame disposed on the chassis, two or three hydraulic cylinder and piston units disposed at the ends of the bed, an articulated connection between the cylinder and piston unit and the bed frame so that the bed frame may be moved to various elevated and/or inclined positions.

3,579,672
METHOD AND APPARATUS FOR MOVING OBJECTS
Laurel A. Koll and Walter Crook, Jr., Ruleville, Miss., assignors to Diamondhead Properties, Inc.
Continuation-in-part of application Ser. No. 706,755, Feb. 14, 1968. This application Feb. 5, 1970, Ser. No. 9,029
Int. Cl. A61g 7/08, 7/10
U.S. Cl. 5—81 28 Claims



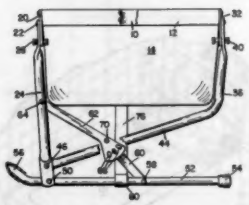
An improved transporter device includes a pair of superposed aprons formed as endless belts or portions thereof and which function to receive, carry, or deposit objects in accordance with desired transferring and carrying requirements. Each of the aprons is supported by a non-rigid support means which maintains supporting surfaces of the pair of aprons in substantially horizontal planes of operation for transferring objects from one horizontal surface to a surface provided on the transporter device itself. Transferring movements of the two aprons can be carried out by controlled translating movements of the supporting means contained within the two belts, and the lower apron or belt includes a section which is fixed relative to a base portion of the transporter device so that the lower apron does not have to be driven. In addition, the upper apron defining belt can be alternatively driven or not driven relative to its support means in accordance with loading, unloading, or positioning functions that may be desired. The non-rigid support means are made up of a number of flexible fingers so that the apron can conform to irregularly shaped objects, such as a patient being moved onto or from a hospital bed, so that the weight of the object is transferred downwardly through the aprons and their associated support means to an area of surface directly beneath the object when the object is supported by the apron. Control means are provided for controlling cycles of loading, unloading and positioning with the transporter device, and the device offers a variety of functions and methods of use.

3,579,673
COMBINATION CAR SEAT AND CRIB
Kenneth A. Hirschey, 6804 Southdale Road, Edina, Minn. 55435
Filed Dec. 3, 1968, Ser. No. 780,818
Int. Cl. A62b 35/00; A47d 7/00, 9/00
U.S. Cl. 5—94 9 Claims



A combination car seat and crib for children including a crib portion composed of a bottom wall and four vertical walls formed from a strong lightweight molded material, e.g. foamed polystyrene, within which the child lies when sleeping. The child's head is cradled between energy absorbing bumpers consisting of vertical partitions molded integrally with the crib at one end. A removable seat slides into place above the partition. Seat belts normally provided with the car secure the crib or crib and seat in place and also function to hold the child in the seat.

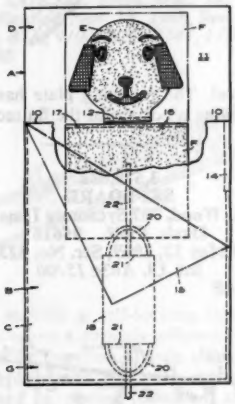
3,579,674
INFANT'S SAFETY CAR BED
Zoel W. Blais, Templeton, and Harold F. Shaw, Leominster, Mass., assignors to Thayer, Inc., Gardner, Mass.
Filed Nov. 13, 1969, Ser. No. 876,293
Int. Cl. A47d 7/04
U.S. Cl. 5—94 10 Claims



A folding car bed comprising an upper open rectangular frame and a depending flexible body support with a mattress therein, a safety harness, a strap on the safety harness extending through the mattress and the bottom of the flexible support for securement underneath the same; a folding leg frame on the upper frame at each end thereof, each

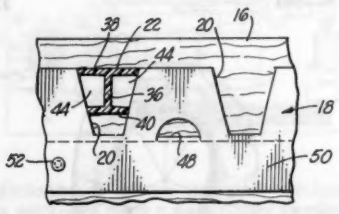
leg frame comprising a forwardly extending free-ended foot having a rearwardly extending spur thereon, each foot being pivotally mounted with respect to its leg, an adjustable locking bracket for each foot, said leg frames being foldable flatwise against the upper frame.

3,579,675
CHILD'S SLEEPING BAG
Leila C. Scheer, 1272 Balboa Ave., Burlingame, Calif. 94010
Filed Feb. 24, 1970, Ser. No. 14,260
Int. Cl. A47g 9/00
U.S. Cl. 5—343 **6 Claims**



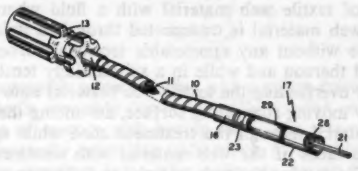
A child's sleeping bag having a lower panel projecting endwise beyond the top edge of an upper panel at the head end of the bag, with an ornamental pillow attractive to a child secured to the projecting part, and a flap secured at an edge to the lower panel so that the flap may be moved into a position to overlie and protect the pillow from being soiled when a child occupies the bag, the flap being foldable into a compartment between the panels to thus expose the pillow.

3,579,676
BEEHIVE
Paul W. Pierce, 1630 W. 9th St., Upland, Calif. 91786
Filed Apr. 16, 1969, Ser. No. 816,679
Int. Cl. A01k 47/02
U.S. Cl. 6—2 **10 Claims**



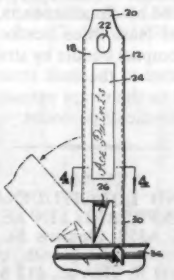
A bee frame and a super for a beehive. The bee frame is a unitary molded plastic structure including a permanent, molded plastic comb foundation characterized by a novel cellular configuration and integrally joined to the frame bars in such a way as to condition the frame to support the weight of a honeycomb for an extended period of time without warping and to permit machine uncapping of the comb. The super has notched frame supports of novel configuration for supporting a number of bee frames in laterally spaced side by side relation to provide an optimum spacing between adjacent frames and permit handling and transportation of a hive containing bees and honeycomb without damage to the bees or honeycomb.

3,579,677
FLEXIBLE ROTARY COMPOUND TOOL
Robert Ullman, Wilton, Conn., assignor to Ullman Devices Corporation, Ridgefield, Conn.
Filed Feb. 7, 1969, Ser. No. 797,650
Int. Cl. B25f 1/04
U.S. Cl. 7—1 **6 Claims**



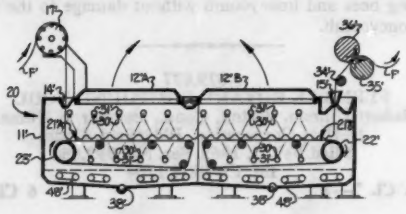
A complete self-contained compound tool, useful in particular as a carburetor-distributor adjustment device. It incorporates a flexible shaft-flexible tube combination that is capable of functioning through a tortuous path and integrates in a single head two implements, a hex key and a screw driver, each being rendered alternately usable by a sliding head adjustment.

3,579,678
PAINT CAN RIM PIERCER
James L. Regan, Hayward, Calif. (409 Dunkel St., Fairbanks, Alaska 99701)
Filed Apr. 30, 1969, Ser. No. 820,511
Int. Cl. B25f 1/04; B67b 7/44
U.S. Cl. 7—14.1 **11 Claims**



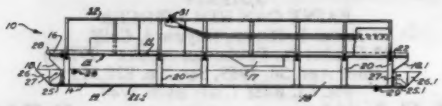
A paint can rim trough punch means for punching drain holes in the rim trough of a paint can including a handle member having a hook on one end receivable under the paint can rim and an inwardly positioned outwardly extending V-shaped piercer member movable when the hook is positioned under the rim to pierce the rim trough.

3,579,679
TENSIONLESS LIQUID TREATING APPARATUS AND METHOD
David M. Willis, Spartanburg, S.C., assignor to Jonathan Logan Inc., New York, N.Y.
Filed Dec. 10, 1968, Ser. No. 782,587
Int. Cl. B05c *5/00*
U.S. Cl. 8—151 11 Claims



A method of and apparatus for treating a running length of textile web material with a fluid wherein the textile web material is transported through a fluid treating zone without any appreciable tensional forces being imposed thereon and while in a substantially tension-free state by overfeeding the textile web material onto a horizontally moving supporting surface, advancing the textile web material through the treatment zone while spraying opposite faces of the web material with treatment fluid and while causing the web material to follow an undulating path of travel with any given portion thereof only intermittently engaging the supporting surface.

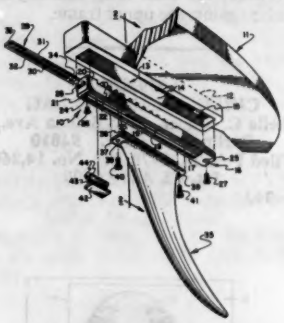
3,579,680
MOTORIZED FLOAT
Leslie R. McLean, Box 414, 414 Strathcona Ave., Kelowna, British Columbia, Canada
Filed Mar. 3, 1969, Ser. No. 803,732
Int. Cl. B63b *35/00;* B63c
U.S. Cl. 9—1 3 Claims



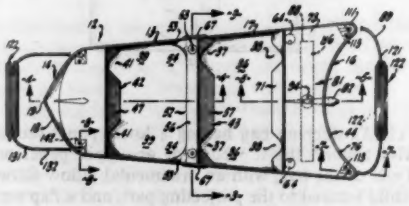
A motorized float for supporting house trailers having a trailer-supporting deck structure supported by a plurality of elongated fore and aft flotation units, each of the latter being formed of at least three pontoons which are arranged in a tight, compact bundle by straps extended thereabout and connected to the deck structure. A protective member connected to the straps extends longitudinally of and beneath each bundle of pontoons.

3,579,681
SECTIONAL AND LONGITUDINALLY ADJUSTABLE SURFBOARD FIN ASSEMBLY
Karl D. Pope III, 6377 Clemens St., and Thomas H. Morey, 36 Lincoln Drive, both of Ventura, Calif. 93003, and Robert R. Tierney, 412 Mallory Way, Ojai, Calif. 93023
Filed Apr. 1, 1969, Ser. No. 811,810
Int. Cl. A63c *15/00*
U.S. Cl. 9—310 7 Claims

A surfboard fin assembly includes a longitudinally adjustable fin section movably mounted within an elongated channel formed by a fin base section. The fin base section has tapered exterior side walls sized for wedging engagement with tapered interior side walls of a mounting box. The fin base section can be selectively interlocked with the fin section by use of a retaining plate that is slidably coupled to the fin base section and is located in the elongated channel. The retaining plate has a positioning groove for receiving a portion of the fin section.

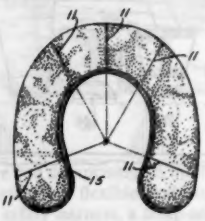


3,579,682
SKI-BOARD
Craig A. Wood, 707 Sycamore Lane No. 1, Davis, Calif. 95616
Filed May 12, 1969, Ser. No. 823,637
Int. Cl. A63c *15/00*
U.S. Cl. 9—310B 11 Claims



An elongated hull includes shaped spaces to receive a skier's feet. A rudder on the after end of the hull affords steering capabilities, the rudder being controlled by a bridle held by one hand of the skier, the other hand holding a lead line extending to the forward end of the hull and helping the skier to maintain balance.

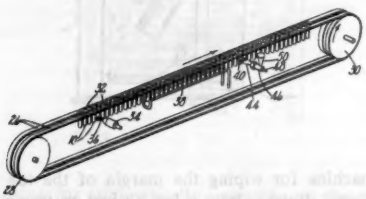
3,579,683
HORSESHOE-SHAPED LIFEBUOY AND METHOD OF MAKING THE SAME
James H. Robertson, 5238 Vineland Ave., North Hollywood, Calif. 91601
Filed Aug. 15, 1969, Ser. No. 850,432
Int. Cl. B63c *9/10*
U.S. Cl. 9—340 12 Claims



A horseshoe-shaped life buoy and method of making the same in which a substantially U-shaped body member

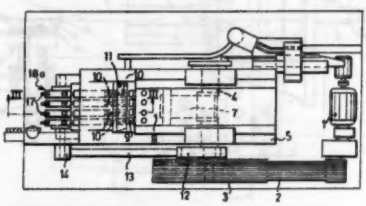
having a pair of spaced arms is formed of polystyrene foam material or the like. One or more cuts are made in the body member, which cuts extend across the entire thickness of the body member inwardly from the outer edge of the body member. The cuts permit the arms to flex, shift and "give" along the cuts. The buoy can accordingly withstand separation pressure exerted against the arms which would normally cause it to break or crack. The body member may be compressed for added strength.

3,579,684
METHODS OF MAKING SELF-LOCKING THREADED ELEMENTS
Richard J. Duffy, Salem, Mass., assignor to USM Corporation, Flemington, N.J., and Boston, Mass.
Original application Apr. 5, 1967, Ser. No. 628,683, now Patent No. 3,498,352, dated Mar. 31, 1970. Divided and this application Nov. 25, 1968, Ser. No. 778,636
Int. Cl. B23g *9/00*; B21k *1/44, 1/56, 1/64*
U.S. Cl. 10—10 **9 Claims**



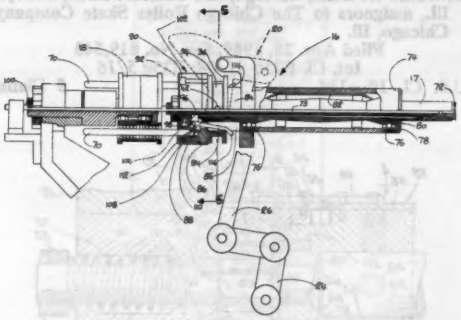
Method of making a self-locking threaded alement, e.g. a screw including a strongly adhered convexly curved plastic body on its threaded surface allowing smooth assembly and giving strong frictional engagement between the element and a mating threaded surface. In the method, a stream of fine particles of heat-softenable plastic is directed against a threaded surface portion of a heated metallic element. Contacting particles are caught on the heated surface and fused by heat from the element to form a continuous plastic body which is then hardened by cooling.

3,579,685
MECHANISM FOR EJECTING WORKPIECES FROM THE MATRICES OF UPSETTING MACHINES
Gerardus Cornelis van de Meerendonk, Helmond, Netherlands, assignor to Nedschroef Octrooi Maatschappij N.V., Helmond, Netherlands
Continuation of application Ser. No. 602,001, Dec. 15, 1966. This application July 17, 1969, Ser. No. 849,552
Claims priority, application Netherlands, Dec. 17, 1965, 6516468
Int. Cl. B21k *1/44*
U.S. Cl. 10—12 **6 Claims**



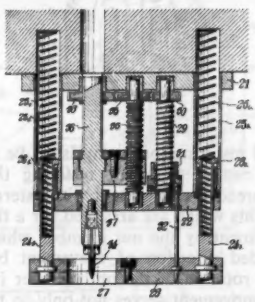
The disclosure is of an improved mechanism for ejecting a workpiece from a matrix after forming therein and includes a rocker shaft carrying an adjustable cam pivoted thereon on an axis parallel to the axis of the rocker shaft, a lever having an ejecting arm and a follower arm, the latter engaging the cam on the rocker shaft.

3,579,686
AUTOMATIC SCREW MACHINE
Jess Frank Sorenson, Yucaipa, Calif., assignor to Sorenson Engineering, Inc.
Filed Oct. 7, 1968, Ser. No. 765,391
Int. Cl. B23b *7/00, 13/00, 15/00*; B23g *1/00, 11/00*; B22p *23/00*
U.S. Cl. 10—87 **10 Claims**



An automatic screw machine with a pulley-driven collet and spindle assembly for reciprocally moving parts into and out of contact with boring tools. The assembly has two rearwardly extending rods which fit slidably within receptive openings in a drive pulley to permit its axial reciprocation while being driven by the pulley. The assembly also has a pair of chucking levers mounted to pivot about one end, under the direction of a timing cam, and exert cam-like collet opening and closing pressures on a responsive member. The machine has an index rod and an index plate with receptive holes for the rod. The plate is affixed to a cam-controlled shaft to which a tool holder is also affixed. When the index rod is moved into one of the holes in the plate, a part held by the collet and spindle assembly is guided to a particular tool on the tool holder.

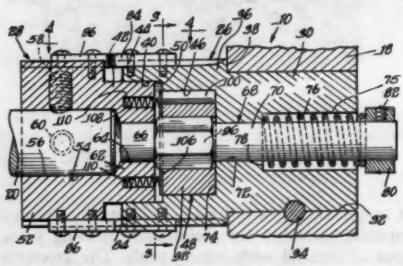
3,579,687
TAPPING APPARATUS
Hideo Hoshi, 40 Minamiide Nakaodai, Yamada-cho, Nishi-ku, Nagoyashi, Japan; and Masao Washi, 3083 Oazaikeda, Ikeda-cho, Kitaazumigun; and Hiroshi Yoshiki, 11–382 Higashi, Arigasaki, Matsumotoshi, both of Nagano-ken, Japan
Filed Sept. 30, 1968, Ser. No. 763,856
Claims priority, application Japan, Oct. 9, 1967, 42/64,686, 42/64,687
Int. Cl. B23g *1/00*
U.S. Cl. 10—129 **4 Claims**



A tapping machine in which a ball screw and a spline shaft with a tap secured at its end are mounted to a press ram in a mutually meshed relation through gearing, and

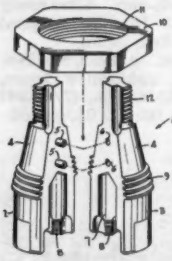
as the press ram is moved up and down, the up and down strokes of the press are converted into rotation by the ball screw, with the produced rotating force being transmitted to the spline shaft to thereby effect tapping operation.

3,579,688
TAP HOLDER
Lawrence W. Keltz, Chicago, and Charles Marek, Berwyn, Ill., assignors to The Chicago Roller Skate Company, Chicago, Ill.
Filed Apr. 28, 1969, Ser. No. 819,543
Int. Cl. B23b 31/08; B23g 5/16
U.S. Cl. 10—134 5 Claims



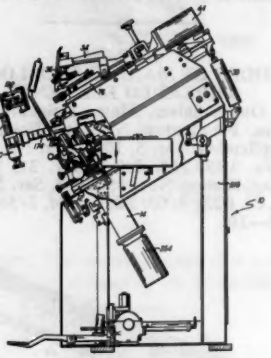
A tap holder assembly including relatively axially and rotatably movable parts with a one-way rotary clutch therebetween, and a spring-biased plate for maintaining elements of the clutch in proper assembled relationship during axial relative movement of the parts.

3,579,689
THREAD CONDITIONING AND RESTORING TOOL
Edward F. Ferkovich, 1341 S. 5th St., Raton, N. Mex. 87740
Filed Oct. 4, 1968, Ser. No. 765,190
Int. Cl. B23g 5/04, 5/06
U.S. Cl. 10—140 1 Claim



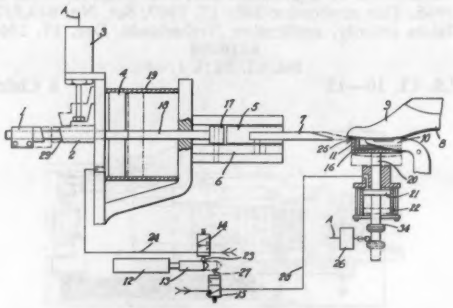
A threaded restoring tool comprising die elements having internal cutting teeth for restoring threads, a nut member in threaded engagement with external threads on the die elements which are arranged for a threaded direction of movement by the nut member which is opposite to the threaded direction of movement by the cutting teeth so that rotation of the nut member in its threaded direction of movement serves not only to tighten the die elements about the threads to be restored but causes the cutting teeth to rethread the threads to be restored by moving the cutting teeth in its opposite direction of movement.

3,579,690
TOE LASTING MACHINE
Jacob S. Kamborian, 70 Crestwood Road, West Newton, Mass. 02165
Filed Sept. 17, 1969, Ser. No. 858,667
Int. Cl. A43d 21/00
U.S. Cl. 12—12.4 18 Claims



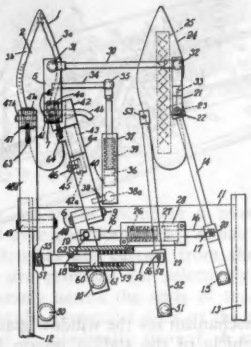
A machine for wiping the margin of the toe portion of an upper draped about a last against an insole located on the bottom of the last. The wiping is performed by wipers, having a toe to heel component of movement, that perform their wiping operation in response to the engagement of a heel clamp with the heel portion of the last while the heel clamp is locked against movement away from the last.

3,579,691
SHOE LASTING MACHINES
Rudi Fichtner, Ober Horgern, and Wilhelm Klein, Frankfurt am Main, Germany, assignors to USM Corporation, Boston, Mass.
Filed Jan. 19, 1970, Ser. No. 3,912
Int. Cl. A43d 21/00
U.S. Cl. 12—12.4 5 Claims



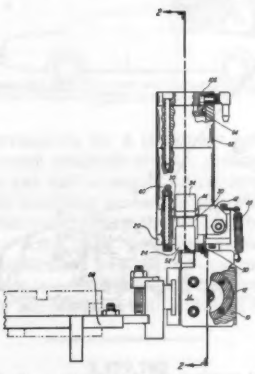
A shoe lasting machine in which a stop limits movement of wipers to an intermediate position in which an upper has been wiped over a shoe bottom only enough to hold an insole against a last bottom, and a pressure plate which previously held the insole is thereafter retracted and controls continued movement of the wipers.

3,579,692
SHOE MACHINES
Anton Muhlbach and Gerhard Lauckhardt, Frankfurt am Main, Germany, assignors to USM Corporation, Boston, Mass.
Filed Feb. 16, 1970, Ser. No. 11,597
Claims priority, application Germany, Feb. 25, 1969, P 19 09 474.7
Int. Cl. A43d *21/00*
U.S. Cl. 12—8.3 6 Claims



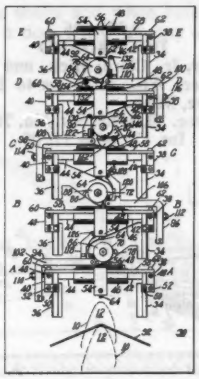
A machine for automatically operating on the margin of a shoe bottom including a rotary tool movable along the margin and cooperating with guide means for directing lateral movement of the tool relative to the margin. The guide means includes a light responsive means such as a photocell which registers on a light guide comprising a light source and a template located to the front of the light source.

3,579,693
PINCERS ASSEMBLY
Charles A. Robinson, Waltham, Mass., assignor to Jacob S. Kamborian, West Newton, Mass.
Filed Mar. 9, 1970, Ser. No. 17,406
Int. Cl. A43d *23/00*
U.S. Cl. 12—14.5 6 Claims



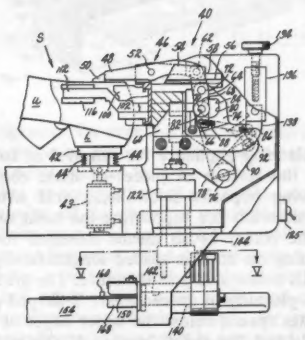
A pincers assembly for stretching an upper about a last and moving the margin of the upper inwardly of the insole periphery. The assembly comprises a pincers that is mounted in a housing with the housing being mounted to a support for heightwise movement and the support being mounted to a base for inward-outward movement.

3,579,694
AUTOMATIC SHOE MACHINERY AND OPERATION OF THE SAME
Herman A. Imhof, Hamilton, Mass., assignor to USM Corporation, Boston, Mass.
Filed June 2, 1969, Ser. No. 829,307
Int. Cl. A43d *25/00;* A43b *13/00*
U.S. Cl. 12—17 17 Claims



A through feed finishing machine designed to provide an operation such as sole reduction on defined margins or edges of an unattached shoe sole initiated relative to the ball point of the sole. The machine includes pairs of finishing tools, for example, rotatable reducing tools mounted in biased relationship to operate on opposite sides of a sole. Pressure equalizing means are mounted opposite each of the tools to assist in keeping the sole moving along a path of travel through the machine and insure uniform finishing by each of the tools during the finishing operation of the lengthwise margins at predetermined points defined relative to the ball points of the sole. The sole is urged through the machine by drive rolls and is stabilized by holddown rolls acting in pairs.

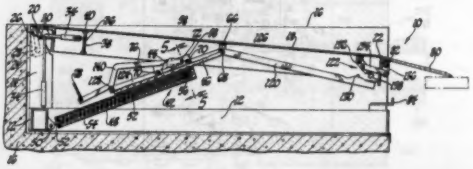
3,579,695
SHOE SUPPORTS
Herbert W. Boot, Leslie R. Parr, and Shirley L. W. Fudger, Leicester, England, assignors to USM Corporation, Boston, Mass.
Filed Oct. 8, 1969, Ser. No. 864,704
Claims priority, application Great Britain, Oct. 10, 1968, 48,014/68
Int. Cl. A43d *21/00, 23/00*
U.S. Cl. 12—127 6 Claims



A shoe support for holding a shoe bottom upmost in position to be engaged by tools which rough the marginal

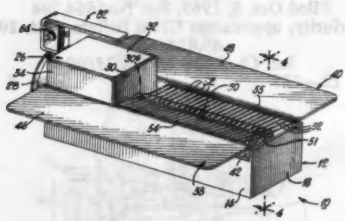
portion of the overlasted upper. The support includes a holddown foot which engages the bottom of the shoe at the heel area. Means are provided for selectively removing the holddown foot to an inoperative position to permit the tools to act on the entire margin from toe to heel as distinguished from only from the toe to the heel breast line when the holddown foot is in operative clamping position.

3,579,696
DOCKBOARD
Robert W. Hecker, Jr., Clare, Mich., and Robert C. Beckwith, Milwaukee, Wis., assignors to Loomis Machine Company, Clare, Mich.
Filed Dec. 30, 1968, Ser. No. 787,652
Int. Cl. B65g 11/00
U.S. Cl. 14—71 **22 Claims**



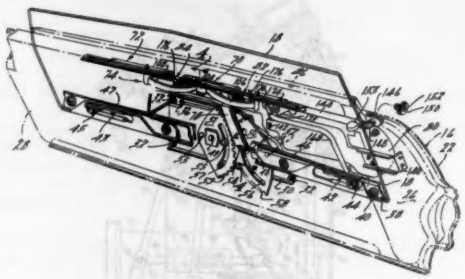
A dockboard assembly including a ramp pivotally connected to a support means and biasing means urging the ramp to pivot upwardly. A releasable holding means acts in opposition to the biasing means for restraining the biasing means from raising the ramp. A lip is pivotally connected to the ramp for pivotal movement between an extended position and a pendent position. The improvement is to include a control means responsive to the pivotal movement of the lip for releasing the holding means so that the ramp will automatically pivot upwardly.

3,579,697
MEAT CLEANING BRUSH
Gilbert L. Smith, 1305 23rd St., Peru, Ill. 61354
Filed Dec. 1, 1969, Ser. No. 881,157
Int. Cl. A46b 13/02
U.S. Cl. 15—3.1 **12 Claims**



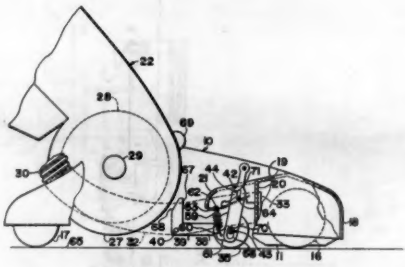
A meat cleaning appliance for removal of foreign material from the surface of pieces of meat comprising a housing having opposite sidewalls, a grid structure between said sidewalls for supporting the meat on a cleaning pass, and rotary brush means mounted for rotation in said housing on an axis spaced longitudinally between said sidewalls below said grid structure. The grid structure comprises a plurality of spaced apart V-shaped grids having the apexes spaced below the upper edges of the housing sidewalls and the radial bristles of the brush means project upwardly above the apexes of the grids for cleaning engagement with the meat surfaces.

3,579,698
TAILGATE WINDOW WASHER
Marcel E. Verdoodt, Warren, and Klaus A. Michalke, Utica, Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Aug. 30, 1968, Ser. No. 756,615
Int. Cl. A47l 1/02
U.S. Cl. 15—250.1 **8 Claims**



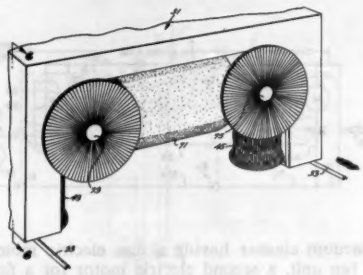
A washer mechanism for the window glass of a tailgate of a motor vehicle of the station wagon type in which a pair of wiper blades are mounted within the gate for selective movement between wiping and retracted positions in response to up and down movement of the window glass with a plurality of nozzles, supplied by a reservoir and pump assembly positioned within the gate, positioned directly below the wipers to selectively direct cleaning fluid against the window glass to facilitate the wiping operation. The wipers, in their wiping position, remain stationary and the glass is moved past the wipers to accomplish the wiping and washing action.

3,579,699
SUCTION CLEANER NOZZLE ADJUSTMENT
Jerry L. Balzer, Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed Feb. 20, 1969, Ser. No. 800,893
Int. Cl. A47l 5/34
U.S. Cl. 15—361 **5 Claims**



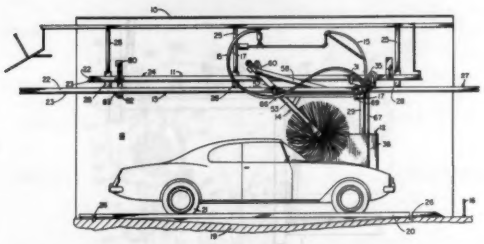
In an upright suction cleaner, movement of the propeling handle to its rest position raises the nozzle from one of a plurality of selected operative positions to an inoperative position and renders a nozzle adjusting device ineffective, and movement of the handle from its rest position renders the nozzle adjusting device effective to reposition the nozzle to any one of the plurality of positions selected prior to movement of the handle to its rest position.

3,579,700
CAR WASHING APPARATUS
David Merl Haley, Glendale, Calif., assignor to California Car Wash Systems, Inc., Sun Valley, Calif.
Filed Aug. 1, 1969, Ser. No. 846,851
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 **4 Claims**



Car washing apparatus including a moveable frame to be advanced over a stationary car. A pair of vertically disposed side brushes are carried from the frame and control means are provided for selectively moving the brushes transversely across the ends of the car and for holding them at the respective sides of the car while the frame is moved longitudinally thereof. A safety control is responsive to such brushes engaging projections at the end of the car during their transverse travel to cause the frame to back away from the car and move the brushes clear of the projections so they can continue their transverse travel.

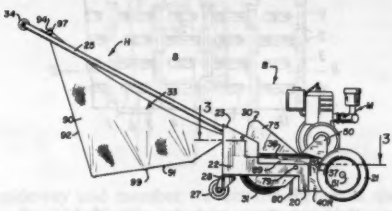
3,579,701
AUTOMATIC CAR WASHER
Clair R. Crisp, Jr., 3308 E. 30th Ave., Spokane, Wash. 99203
Filed June 3, 1968, Ser. No. 734,083
Int. Cl. B60s *3/06;* **A46b** *13/02*
U.S. Cl. 15—21 **5 Claims**



Washing mechanism for a stationary automobile providing a first brush rotatable about a vertical axis transiting about the car and a second brush rotating about a horizontal axis transiting across the top with mechanical linkage therebetween causing the vertical brush to move the horizontal brush. The invention provides auxiliary systems for application of washing and auxiliary solutions. The device is economic in construction and adapted particularly for attendantless coin activated operation.

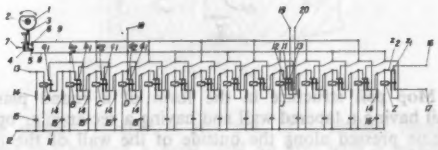
3,579,702
SWEEPER
David R. Thompson, Denver, Colo., assignor to Rental Equipment Manufacturing Corporation, Denver, Colo.
Filed July 22, 1969, Ser. No. 843,608
Int. Cl. E01h *1/04*
U.S. Cl. 15—79 **8 Claims**

A self-propelled, wheel mounted sweeper carrying an engine to drive the unit; a sweeper brush adapted to be rotated to pick up debris on a lawn, ground surface or the like with the brush being directly connected to the engine to rotate it at a fixed speed with respect to the speed of rotation of the engine. This sweeper unit includes a pair of drive wheels mounted upon a shaft and operatively connected to the engine to propel the unit. This connection to the engine is through a differential carried upon a drive shaft connected to the engine and a driving shaft connected to the drive wheels. The differential is free to rotate upon these shafts and when being so rotated by the driven shaft, it does not apply any driving torque to



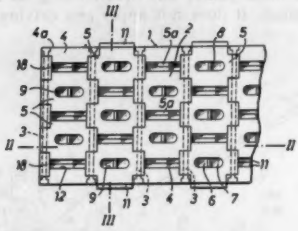
the driving shaft. A brake is provided to reduce the rate of rotation of this differential or to stop its rotation completely and in either case, impart driving torque to the driving shaft. The driving shaft rotates in a direction opposite to the driven shaft when so restrained by the brake. This action is advantageously used to permit the drive wheels to rotate in a forward direction to propel the sweeper, while at the same time the engine and the sweeper brush rotate in the opposite direction to effect an overthrow of debris into a basket carried behind the sweeper.

3,579,703
ARRANGEMENTS FOR CREATING DELAYED ELECTRIC CONTROL EFFECTS IN RESPONSE TO THE RECEPTION OF ELECTRIC IMPULSES
Alfred Schmermund, 62 Kornerstrasse, Gevelsberg, Westphalia, Germany
Filed Mar. 3, 1966, Ser. No. 531,550
Claims priority, application Great Britain, Mar. 12, 1965, 1,048/65
Int. Cl. H01h *47/24*
U.S. Cl. 317—124 **7 Claims**



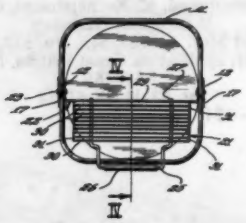
An arrangement for creating a delayed electric control effect in response to the reception of an electric impulse comprises a relay chain including a plurality of relays connected so that on energization of any of the relays (except for the last relay of the chain) a succeeding relay is prepared for being energized and receives a voltage to energize said succeeding relay when subsequently a switch actuator operates a timing switch, the electric impulse energizing the first relay of said relay chain, and at least one of the succeeding relays having means for creating the control effect when said one relay is energized. The relays of the relay chain may be electromagnetic relays or photoelectric relays.

3,579,704
ARTICULATED FLOOR MAT
Hans Holzl, Maulach, Germany, assignor to Kunststoffe, Hans Holzl KG, Maulach, Germany
Filed Feb. 25, 1969, Ser. No. 801,963
Claims priority, application Germany, Oct. 12, 1968, P 18 02 766.2
Int. Cl. A47l 23/22; A47g 27/02
U.S. Cl. 15—215 **9 Claims**



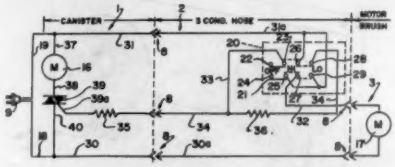
An articulated floor mat formed of hingedly interconnected links each having internal dirt chambers, two opposed marginal connecting portions and an enlarged mid portion which is wider at its base than at its upper face. The hinging links fit together in such a manner that a mat base is formed which is continuous and uninterrupted. The upper face of the mat comprises a plurality of relatively small openings to permit dirt to fall into said dirt chambers.

3,579,705
PAIL HAVING MOP WRINGING GRILL
Gordon L. Blumenschein, Box 122, Lake Villa, Ill. 60046
Filed Jan. 23, 1969, Ser. No. 793,351
Int. Cl. A47l 13/58
U.S. Cl. 15—260 **7 Claims**



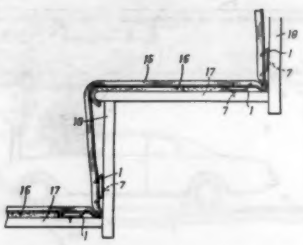
Mop pail structure in the form of a round plastic pail having a tapered wall and having a rectangular open frame pressed along the outside of the wall of the pail and forming the top of the pail into a rectangular open pail structure. The open frame cooperates with the normal pivot ears for the conventional bail of the bucket, to form a pivotal mounting for a grill-like bail. The grill-like bail is in the form of a rectangular grill having a handle on the outer side thereof, which may be used to carry the pail from place to place, and may be engaged with the top of the pail to accommodate the placing of a mop on the grill and the squeezing of the mop by the pressure of the foot. The rectangular open frame not only forms the top of the pail into a generally rectangular form, to obtain a greater area for the grill, but also strengthens the pail to the extent that heavy foot pressure may be exerted on the mop and grill without deforming or overturning the pail during a mop wringing operation.

3,579,706
VACUUM CLEANER MOTOR CONTROL
Thomas E. Hetland, St. Paul, Minn., assignor to Whirlpool Corporation
Filed Nov. 12, 1968, Ser. No. 774,922
Int. Cl. A47l 5/36
U.S. Cl. 15—327 **10 Claims**



A vacuum cleaner having a first electric motor for a motor fan unit, a second electric motor for a floor contacting motor brush unit and a switch for controlling both of the motors that can conveniently be mounted on the handle of the hose assembly for connection to the motor brush unit. The switch control mechanism preferably comprises a first switch circuit including an electric current varying means for varying the current to the first motor and thus the degree of suction of the suction unit and a second switch circuit for energizing the motor of the motor brush unit in cleaning the floor.

3,579,707
FASTENING DEVICES FOR CARPETS
Sidney Whistler, Maidstone, England, assignor to Whistler Green Engineering Products Limited, Rushden, Northamptonshire, England
Filed Sept. 19, 1968, Ser. No. 760,752
Claims priority, application Great Britain, Sept. 21, 1967, 43,083/67
Int. Cl. A47g 27/04
U.S. Cl. 16—8 **5 Claims**

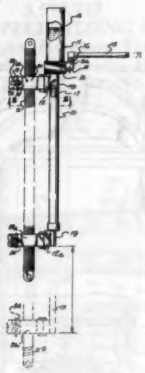


A carpet fastener is formed of a length of strip material at least one of the edges of which is bent to form an upwardly-extended flange having a series of spikes which project from it and which will enter the carpet to hold the latter. Preferably both edges of the strip are bent up and carry spikes and the planes of the flanges and of the spikes are substantially parallel to each other and form acute angles with the plane of the floor on which the fastener is mounted.

3,579,708
SPRING CHECK
James O. Lee, 243 Olive, Claremont, Calif. 91711
Filed Mar. 24, 1969, Ser. No. 809,613
Int. Cl. E05f 3/10
U.S. Cl. 16—52 **1 Claim**

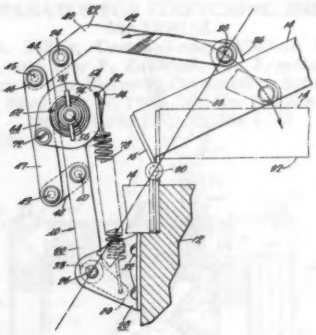
A spring check comprising a hydraulic cylinder having a piston movable therein, a fastener on the cylinder for

connection to one end of the spring, a second fastener on the extending end of the piston for connection to the other end of the spring, a fluid receptacle, and an adjustable check valve between the receptacle and the hydraulic



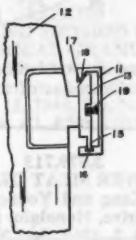
cylinder, the fastener consisting of a pair of pivotally connected plates having arcuate portions surrounding the spring, and a bolt and wing nut connection for clamping the plates about the spring.

3,579,709
DOOR RETURN AND CHECK MECHANISM
Charles G. Pierie, 1460 Creek Road, Huntingdon Valley, Pa. 19006
Filed Dec. 24, 1969, Ser. No. 887,969
Int. Cl. E05f *1/08*
U.S. Cl. 16—65 **12 Claims**



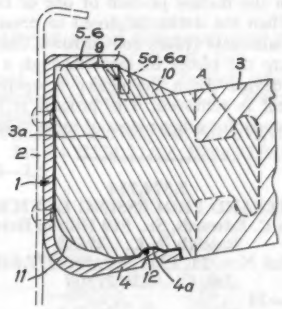
A door return mechanism including door checking means for slowing the rate of return as the door approaches its closed position. The return mechanism includes a coil spring which, in addition to its door return function, serves to hold the door open when the linkage is moved to an over-center position. The checking means comprises a disc-type brake, the brake surfaces of which are maintained in frictional engagement by an adjustable spring force. The brake is mounted across a parallel linkage which is arranged to provide a greater angular movement of the brake surfaces and hence a greater braking effect as the door approaches the door frame.

3,579,710
TRAVERSABLE HARDWARE IN GUIDEWAY FOR SHELF OR DRAPERY USE
Rudolf E. Gartzke, Madison, Wis., assignor to Gartzke's Refrigeration, Inc., Madison, Wis.
Continuation-in-part of applications Ser. No. 650,480, June 30, 1967, and Ser. No. 691,104, Dec. 4, 1967. This application Sept. 9, 1968, Ser. No. 766,663
Int. Cl. A47h *15/00*; E05d *13/02*
U.S. Cl. 16—93 **9 Claims**



A guideway and member traversable therein is shown; the member is resiliently urged into contact with the guideway to resist movement by force applied through a moment arm. The guideway is configured as a slotted box section wherein the member is urged against the inner surfaces of lip projections bounding the slot.

3,579,711
MEANS FOR ATTACHING A DETACHABLE HANDLE FOR KITCHEN UTENSIL VESSELS
André J. Nicolin, Paris, France, assignor to L'Equipement par l'Acier Inoxydable (Equipinox), Paris, France
Filed July 3, 1969, Ser. No. 838,766
Claims priority, application France, July 10, 1968, 158,659; Dec. 3, 1968, 176,433
Int. Cl. A47b *45/02*
U.S. Cl. 16—114 **9 Claims**

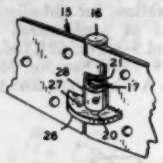


A support secured to the wall of a kitchen utensil vessel and housing a hook, and an arm with a locking notch in its free end arranged opposite the hook, the hook and the locking notch engaging respectively the shoulder and abutment of a detachable handle to secure the handle to the support.

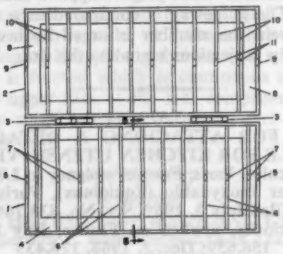
3,579,712
DOOR HINGE WITH SPACED AUTOMATIC LATCHING POSITIONS FOR SELECTIVE DEGREES OF DOOR OPENING
Cecil R. Smith, 719 Old Orchard, Excelsior Springs, Mo. 64024
Filed Sept. 6, 1968, Ser. No. 758,002
Int. Cl. E05d *11/08*
U.S. Cl. 16—141 **2 Claims**

A hinge having an externally threaded sleeve spaced in parallelism with the hinge pin and containing internally;

a plug actuating a compression spring and bearing block against a ball; the sleeve having a reduced opening to permit the ball to extend outward therefrom sufficiently to engage any of several recesses of a relatively stationary plate.

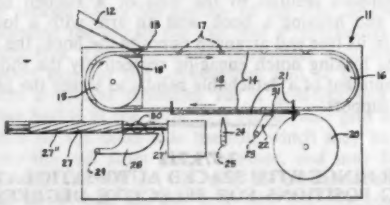


3,579,713
SKEWER MEAT DEVICE
Katherine K. H. Kang and Young Ok Kang, both of 1198 Alewa Drive, Honolulu, Hawaii 96817
Filed Sept. 2, 1969, Ser. No. 854,659
Int. Cl. A47j *43/28*
U.S. Cl. 17—1 **4 Claims**



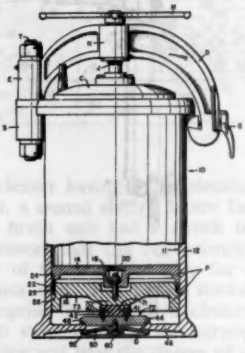
A skewer meat device which facilitates the skewering of pieces of meat by a skewer. Pieces of meat are placed lengthwise on the middle portion of one of two grids of the device. Then the device is closed to press the pieces of meat into alternate ridges and furrows. Then a skewer is inserted into the pieces of meat through a lengthwise hole in the device. Then the device is opened and the skewered meat is removed. The process is repeated as often as necessary for other pieces of meat to be skewered.

3,579,714
GIZZARD PROCESSING DEVICE
John C. Edwards, Sr., 519 Hilltop Drive, Raleigh, N.C. 27610
Filed Nov. 21, 1968, Ser. No. 777,649
Int. Cl. A22c *21/00*
U.S. Cl. 17—11 **4 Claims**



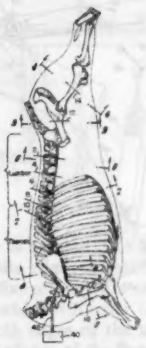
In abstract, a preferred embodiment of this invention is a gizzard cleaning machine which uses a vacuum nozzle to remove dirt from split gizzards, uses a vacuum to hold the gizzards on a conveying belt and uses a vacuum to pull the stomach gut into engagement between a pair of skinning rolls.

3,579,715
STUFFER WITH A RESILIENT CUSHIONING MEANS FOR PISTON
Carl Oscar Schmidt, Jr., Cincinnati, Ohio, assignor to The Cincinnati Butchers' Supply Company, Cincinnati, Ohio
Filed May 2, 1969, Ser. No. 821,287
Int. Cl. A22c *11/06*
U.S. Cl. 17—39 **9 Claims**



Resilient cushioning means are interposed between the adjacent faces of the piston and the manhole cover in the bottom of a conventional sausage stuffer to prevent damage to the cover from impact of the piston thereon.

3,579,716
MEAT TENDERIZING METHOD
James R. Stouffer, Dennis R. Buege, and Wayne A. Gillis, Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.
Continuation-in-part of application Ser. No. 792,023, Jan. 17, 1969. This application Feb. 24, 1969, Ser. No. 801,483
Int. Cl. A22c *9/00*
U.S. Cl. 17—45 **21 Claims**



A method of tenderizing a selected, intact muscle contained in the carcass of a recently slaughtered meat animal where that intact muscle is connected with a portion of the bone structure of the carcass, characterized by applying tension to that muscle in a direction so that it is extended and maintained in a stretched extended condition throughout the onset, duration and completion of rigor mortis in the carcass. The invention is particularly suitable for tenderizing the edible back, front leg, rear leg and rump portions of meat animals in general, and specifically, animals of the bovine, ovine and porcine species

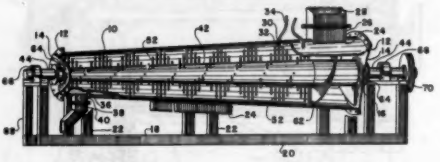
(i.e. beef, lamb and pork, respectively). Following completion of rigor mortis as aforesaid and/or additional amount of time representing the usual market handling time (i.e. 3–5 days), the treated meat will exhibit improved tenderness.

3,579,717

APPARATUS FOR PELLETIZING CARBON BLACK

Ollie Middlebrooks, Houston, Tex., assignor to Continental Carbon Company, Houston, Tex.

Filed Aug. 28, 1968, Ser. No. 755,909
Int. Cl. B29b *5/00*; C09c *1/58*; B29c *23/00*
U.S. Cl. 18—1 11 Claims



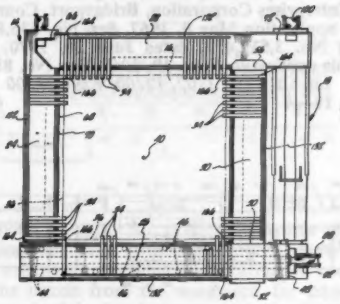
Finely divided solid carbon black is wet pelletized introducing the carbon black and the wet pelletizing liquid into a pelletizing or pelleting apparatus for mixing, agglomerating and pelletizing the black and liquid into pellet form. The pelletizing apparatus is an elongate truncated conical housing rigidly mounted with the axis being in a substantially horizontal plane. The housing has a gradually reduced diameter between its enclosed ends, accordingly being of tapered configuration. The housing has inlet means for introduction of the black and liquid near one end, and an outlet means for the discharge of pellets at the other end. An agitator means comprising a rotatable and axially mounted member having rigidly mounted pins extending from said member to about the interior of the pelletizer housing is mounted within said housing and is connected to a drive means.

3,579,718

APPARATUS FOR STRETCHING SHEET MATERIAL

Harold A. Miller, Castro Valley, William K. Nider, Orinda, and Igor P. Zavialoff, San Francisco, Calif., assignors to The Sierracin Corporation, Sylmar, Calif.

Filed Oct. 17, 1968, Ser. No. 768,368
Int. Cl. B29c *17/02*; D06c *3/08*
U.S. Cl. 18—1 9 Claims



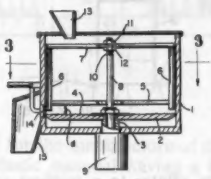
Apparatus for stretching sheet material having working beams arranged transversely to each other to define an enclosed area in which the sheet is placed. One of the beams is stationary to provide a fixed reference. Two of the beams are movable in a direction away from the center of the sheet. A fourth beam is movable along its axis to follow the stretching action. A plurality of clamps are mounted on the respective beams for gripping the sheet and connecting it with the working beams. Drive means are coupled to the movable beams to move them and subject the sheet to stretching forces. The sheet is stretched in transverse directions to increase its surface area and decrease its thickness.

3,579,719

APPARATUS AND METHOD FOR MAKING SPHERICAL GRANULES

Nobuharu Moriya, Harakata, Japan, assignor to Fuji Denki Kogyo Co., Ltd., Osaka, Japan

Filed Nov. 15, 1968, Ser. No. 776,080
Int. Cl. B29b *1/02*
U.S. Cl. 18—1 3 Claims



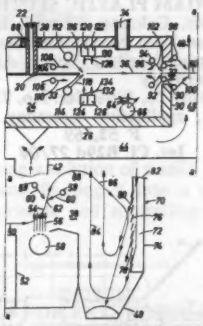
A method and apparatus for converting pasty materials into spherical granules in which extruded segments are fed into a rotating indented plate which effects a centrifugal force on the segments. The rotating segments are retained within a cylindrical wall and a plurality of vertical and horizontal blades are counter-rotated to effect an undulating rotary force on the segments, transforming them into spherical granules.

3,579,720

APPARATUS FOR SUBDIVIDING FLUID MASS INTO GRAINS

Emile Plumat, Gilly, and Jean Duthoit, Marcinelle, Belgium, assignors to Glaverbel, S.A., Watermael Boitsfort, Belgium

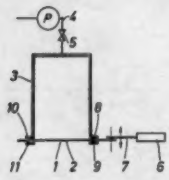
Filed Jan. 4, 1968, Ser. No. 695,757
Int. Cl. B22d *23/08*; B29c *23/00*
U.S. Cl. 18—2.5 15 Claims



An apparatus for subdividing a mass of material, which may be either in liquid or pasty form, into small grains by bringing the material into contact with a rotating piece so that the mass of material will be impelled from the periphery of the piece and divided into individual pieces,

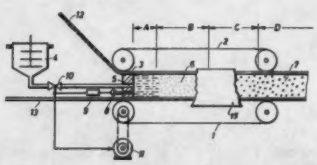
and permitting these pieces to solidify into grains as they travel through a gaseous medium, this being accomplished by submitting the particles to gaseous currents which are nonuniform along the travel paths followed by such particles.

3,579,721
APPARATUS FOR OBTAINING UNIFORM DROPLETS
Roger Max Kaltenbach, 3 Avenue Erlanger, Paris, France
Filed Oct. 18, 1968, Ser. No. 768,679
Claims priority, application Switzerland, Oct. 19, 1967, 14,648/67
Int. Cl. B29d *23/08*
U.S. Cl. 18—2.7 **14 Claims**



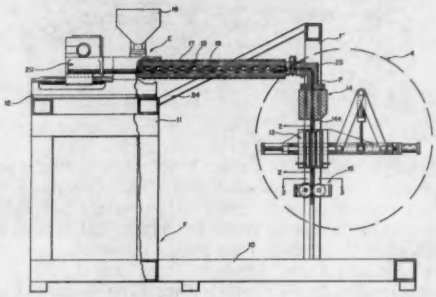
The disclosure relates to a method and apparatus for forming droplets of substantially constant size from a liquid, wherein the said liquid is passed through a perforated wall, and using vibrations to divide the liquid into droplets, the said method being characterized in that the liquid issues from the perforations in the form of laminary jets; the plate is vibrated at one of the resonance frequencies thereof; the stationary wall is maintained in one of its nodal zones so that it is continuously superposed upon the laminar flow of the periodic perturbations which divide the jets into uniform droplets. Among the applications of said method, may be mentioned the manufacture of granulated chemical fertilizers (pure or mixed urea-ammonium nitrate, calcium nitrate, complex fertilizers, etc.), but the method can be used just as advantageously in all cases where it is desired that solid granulated products should be obtained by the dispersal of a liquid, or a product which can be solidified by cooling or drying liquid droplets (as in the manufacture of shot for instance).

3,579,722
APPARATUS FOR CONTINUOUS PRODUCTION OF FOAM PLASTIC SECTIONS
Wolfgang Schmidt, Cologne, Flittard, Karl-Josef Kraft, Leverkusen, and Willi Kurth, Troisdorf, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed May 22, 1968, Ser. No. 731,080
Claims priority, application Germany, June 1, 1967, F 52,569
Int. Cl. B29d *27/04*
U.S. Cl. 18—4 **5 Claims**



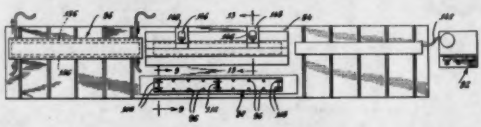
The continous production of foam plastic sections is accomplished in an apparatus comprising a double conveyor belt assembly confined at the sides by lateral side boundary members wherein the inlet aperture between the upper and lower conveyor belts and the lateral side boundaries is closed by a sealing member which has at least one supply nozzle positioned therein.

3,579,723
EXTRUDER-MOLDER
Gaylord W. Brown, Beaverton, Mich., assignor to Koehring Company, Milwaukee, Wis.
Filed July 25, 1969, Ser. No. 844,865
Int. Cl. B29c *3/04*
U.S. Cl. 18—4 **9 Claims**



Extruding-molding apparatus wherein a sheet of synthetic plastic is directed vertically from an extruder to a differential pressure molding assembly which has molds movable into clamped relationship with the sheet. The molds are of less width than the extruding orifice of the extruding head so that a tight seal is assured and the edges of the plastic sheet are cooled at the side edges of the molds so that they may be gripped by members downstream from the mold assembly which support the weight of the sheet and prevent its tearing off, or orientation, under its own weight.

3,579,724
APPARATUS FOR THE MANUFACTURE OF COMPOSITE STRUCTURAL ELEMENTS
Louis Toth, Easton, Conn., assignor to Anchor Enterprises Corporation, Bridgeport, Conn.
Original application May 8, 1967, Ser. No. 636,866, now Patent No. 3,517,472, dated June 30, 1970. Divided and this application Sept. 19, 1969, Ser. No. 859,426
Int. Cl. B29d *3/02, 12/00;* B29c *27/00*
U.S. Cl. 18—4 **4 Claims**



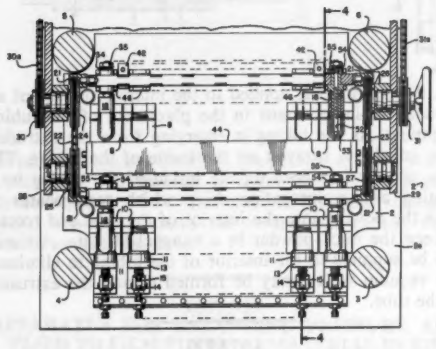
A structural element with thermal barrier means having an elongated thermal insulating plastic locking member with portions which interlock in elongated tracks formed in two elongated metal members to form a rigid unitary member.

3,579,725

MACHINE FOR PRODUCING HOLLOW ARTICLES

Benth Preben Hansen, Glostrup, Denmark, and Saul Blitz, New York, N.Y., assignors to T.W. Manufacturing Company, Inc., New York, N.Y.

Filed May 15, 1968, Ser. No. 729,224
Claims priority, application Denmark, Oct. 13, 1967, 5,080/67
Int. Cl. B29d *23/03*
U.S. Cl. 18—5 3 Claims



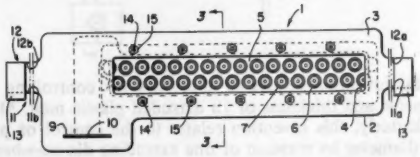
A method of molding and subsequently blow molding plastic parts in suitable molds by retaining the parts, after molding, on cores which are subsequently moved together with the parts to a position from which they are inserted into the respective blow molds for the blow molding operation and a molding machine for performing the method according to the invention. The molding machine has moving means for moving the cores between a position in which they cooperate with the injection molding means and a position in which they cooperate with the blow molding means of the machine.

3,579,726

TEMPLATE ASSEMBLY

Herbert G. Vore and Donald E. Bardsley, Nashua, N.H., assignors to Improved Machinery Inc., Nashua, N.H.

Filed July 25, 1968, Ser. No. 747,687
Int. Cl. B29c *1/00, 23/00;* B29f *1/10*
U.S. Cl. 18—5 16 Claims



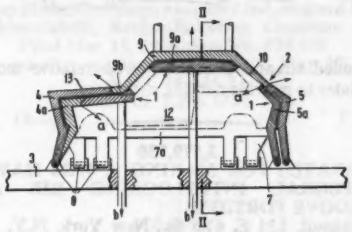
A template assembly for guiding the nozzle of a plastic molding apparatus which assembly has resiliently mounted sockets for engaging and locating the nozzle, for spacing the nozzle from the workpiece, for transmitting fluidized or plasticized and pressured plastic therethrough, to the workpiece, and for transmitting the force of the molding apparatus to the workpiece; a back-up plate providing a bearing surface for the workpiece, and for forming a rivet-type head of the molding plastic "slug" beneath the workpiece; and an alignment edge and stop for orienting the workpiece relative to the nozzle.

3,579,727

FOAM MOULD

Kurt Schwenk, Ernst Gallasch, and Hermann Hablitzel, Wolfsburg, Hannover, and Friedrich Jacob, Steimke, Hannover, Germany, assignors to Volkswagenwerk A.G., Wolfsburg, Germany

Filed Dec. 4, 1968, Ser. No. 781,132
Claims priority, application Germany, Dec. 6, 1967, P 17 29 112.2
Int. Cl. B29d *12/00*
U.S. Cl. 18—5P 3 Claims



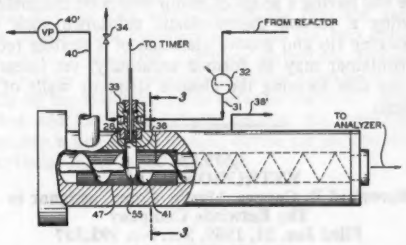
A foam mould for the manufacture of the vehicle body from synthetic plastic material having a base plate with inner and outer mould halves arranged on the plate and subdivided into sections which are movable inwardly and outwardly respectively.

3,579,728

POLYMER SEPARATION

Richard K. Reid, Midwest City, and Richard O. Welty, Bartlesville, Okla., assignors to Phillips Petroleum Company

Original application July 9, 1965, Ser. No. 470,670, now Patent No. 3,506,640, dated Apr. 14, 1970. Divided and this application Dec. 5, 1969, Ser. No. 882,629
Int. Cl. B01d *11/00;* B29f *3/03*
U.S. Cl. 18—12 4 Claims



Means for passing a solution of a solid polymer directly from a reactor and flashing it into a vented extruder, analyzing the extrudate and controlling the reaction in response thereto.

3,579,729

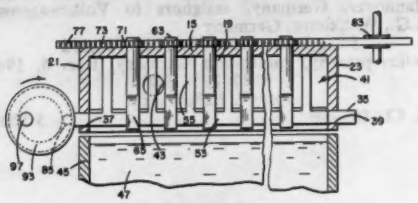
APPARATUS FOR EXTRUDING NET-LIKE STRUCTURES

Theodore H. Fairbanks, West Chester, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed May 16, 1969, Ser. No. 825,212
Int. Cl. B29f *3/01*
U.S. Cl. 18—12 10 Claims

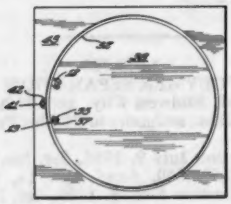
Apparatus in which flowable strand-forming material is extruded through recesses formed along opposing edges

of relatively movable plates and including means for interlacing strands formed from such streams and/or twisting



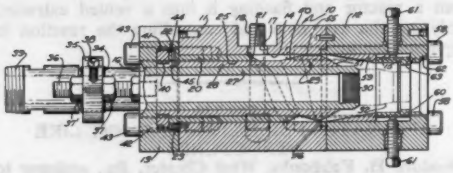
the extruded streams alternately with relative movement of the plates to provide net-like structures.

3,579,730
APPARATUS FOR MAKING A WEB HAVING INTEGRAL INTERLOCKING RIB AND GROOVE PORTIONS
Steven Ausnit, 134 E. 61st St., New York, N.Y. 10021
Original application Oct. 22, 1965, Ser. No. 500,562, now Patent No. 3,371,696, dated Mar. 5, 1968. Divided and this application Feb. 2, 1968, Ser. No. 702,586
Int. Cl. B29f *3/04*
U.S. Cl. 18—12 **10 Claims**



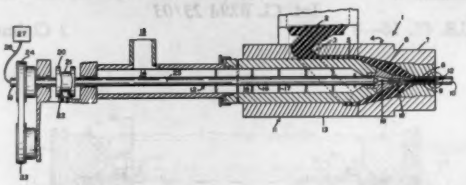
An apparatus for making reclosable bags having a first extruder channel for extruding a first thermoplastic substance and having a series of minor extrusion channels for extruding a second thermoplastic substance such that interlocking rib and groove elements of a flexible reclosable container may be formed separately, yet integrally with the film forming the closure strips or walls of the container.

3,579,731
EXTRUSION HEAD
Beresford B. Cooper, Mystic, Conn., assignor to The Entwistle Company
Filed Jan. 21, 1969, Ser. No. 792,337
Int. Cl. B29f *3/04*
U.S. Cl. 18—13 **3 Claims**



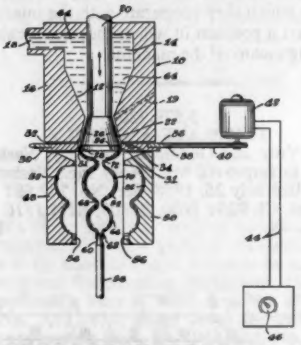
A cross head for plastic material having a guide tube with flow compensating means affixed thereto and which may be readily disassembled for cleaning.

3,579,732
DRY LUBRICANT COATING OF EXTRUDED TUBING
Earl E. Heinzelman, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.
Filed Jan. 23, 1969, Ser. No. 793,488
Int. Cl. B05b *13/06*; B29d *23/04*
U.S. Cl. 18—14 **2 Claims**



A dry lubricant is applied to the interior surface of an extruded tubing to assist in the placement of the tubing on piping. As the tubing is emerging from the extruder, mica powder is sprayed on the inside of the tubing. The mica powder is placed on the inside of the tubing by a rotating and reciprocating drive which reciprocates to force the powder into the interior of the tube and rotates to keep the mica powder in a nonpacked state. Air may also be supplied to the interior of the tubing to eliminate any vacuum which may be formed during the extrusion of the tube.

3,579,733
APPARATUS FOR VARIABLE PARISON FORMING
Walter H. West, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Division of application Ser. No. 615,032, Feb. 9, 1967, which is a continuation of application Ser. No. 288,863, June 17, 1963. This application Feb. 5, 1969, Ser. No. 813,358
Int. Cl. B29d *23/04*
U.S. Cl. 18—14 **2 Claims**

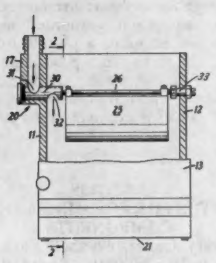


This invention relates to apparatus for controlling the diameter and thickness of an extruded plastic melt. More particularly, this invention relates to the control of parison diameter by rotation of one extruding die member in relation to another.

3,579,734
FLOAT-OPERATED LEVEL CONTROL
Maharaj K. Mehta, Cardiff, Wales, assignor to P. Leiner & Sons (Encapsulations) Limited, Treforest, Glamorganshire, Wales
Filed May 27, 1968, Ser. No. 732,201
Claims priority, application Great Britain, July 18, 1967, 32,919/67
Int. Cl. B29d *7/02*
U.S. Cl. 18—15 **4 Claims**

A spreader box for containing gelatine to be cast into ribbons or sheets on a casting drum including a float-

operated valve consisting of a hollow cylindrical rotary valve member and a cylindrical float parallel to the rotary axis of the valve member and connected thereto so that angular movement of the float about said axis is transmitted to the valve member. The valve member has an



aperture in its side wall which cooperates with the end of a stationary flow passage to limit the flow of gelatine into the spreader box. The float is rotatable manually beyond a position above the rotary axis of the valve member to close the valve.

3,579,735

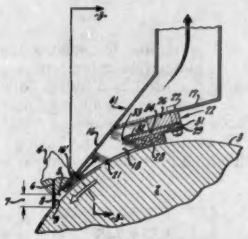
APPARATUS FOR BALANCING PRESSURE APPLIED TO FILM-FORMING MATERIAL IN THE DEPOSITION THEREOF ONTO A CASTING SURFACE

Peter J. Metz, Jr., Castro Valley, Calif., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Original application July 31, 1967, Ser. No. 657,094, now Patent No. 3,520,964, dated July 21, 1970. Divided and this application Oct. 2, 1969, Ser. No. 871,373

Int. Cl. B29d *7/02, 7/10*

U.S. Cl. 18—15R **5 Claims**



In the extrusion of film-forming material from an extrusion device wherein a vacuum is applied to the trailing face of an unsupported section continuously deposited onto a continuously moving casting surface, the pressure applied to such unsupported section is substantially balanced to cause substantially even deposit on the casting surface by concentrating application of suction by independent duct openings at the respective ends of the extrusion device to withdraw outside air which can enter behind the trailing face of said section adjacent said ends.

3,579,736

TIRE VULCANISING PRESS

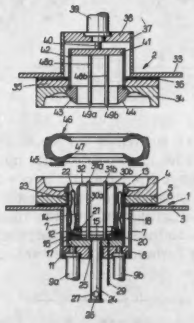
Walter Balle, Dornigheim, and Gunter Pommer, Frankfurt am Main, Germany, assignors to Leonhard Herbert Maschinenfabrik, Bergen-Enkheim, Germany

Filed May 15, 1969, Ser. No. 824,879

Claims priority, application Germany, May 17, 1968, P 17 78 616.2

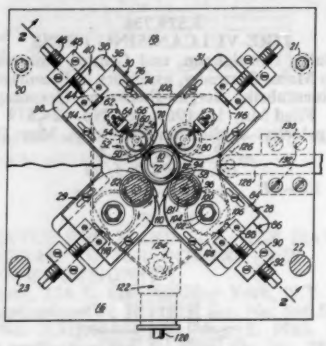
Int. Cl. B29h *5/02*

U.S. Cl. 18—17 **7 Claims**



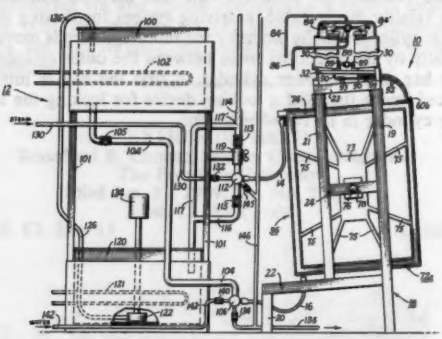
A tire vulcanising press includes a heating bag, an upper part having an upper mould half and a lower part having a lower mould half, an assembly on the lower part including an outer or ejection cylinder, an inner bag guiding cylinder within the outer cylinder, it being arranged that the bag when folded fits into the annular space between the cylinders and that the two cylinders are axiallly displaceable, a driving system for driving the outer cylinder axially whereby the inner cylinder is moved axially by the frictional force between the outer cylinder, the bag and the inner cylinder so that the bag is introduced into a tire, and a locking device for locking the inner cylinder in its raised position.

3,579,737
BRIM CURLING APPARATUS
Reinhold Gerber, Rolling Meadows; James Edward Kerrigan, Arlington Heights, and Harry Ray Hawley, Lombard, Ill., assignors to American Can Company, New York, N.Y.
Filed Oct. 15, 1968, Ser. No. 767,752
Int. Cl. B29c 17/02
U.S. Cl. 18—19 6 Claims



In forming a curled turned-in lip about the open mouth of a flexible-walled, thermoplastic container, a plurality of threaded rollers engage the brim of the containers so that the faces of the thread progressively turn in the brim as the container is advanced longitudinally of the rollers. The threaded rollers are arranged to bias the brim between the faces of the threads to facilitate formation of the turned-in lip as the rollers are rotated.

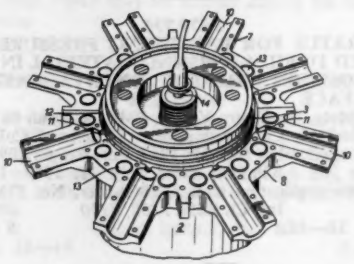
3,579,738
APPARATUS FOR CASTING AND THERMALLY CURING PLASTIC SHEETS
John O. Beattie, 57 Crawford Terrace, Riverside, Conn.
Continuation-in-part of application Ser. No. 604,242, Dec. 23, 1966, now abandoned. This application Nov. 8, 1969, Ser. No. 874,702
Int. Cl. B29c 5/00; B29d 7/02
U.S. Cl. 18—26 8 Claims



An apparatus for casting a plurality of plastic sheets is disclosed. It is comprised of an elevated support track having one or more temperature control cells suspended from it, the cells being enclosed chambers with inlet and outlet ports for the passage of U-shape fluid and at least one sidewall which is suitable as a mold surface of a plastic casting zone. A second mold surface is independently suspended from the elevated support track and is positioned in facing relationship with the first surface, a resilient sealing gasket between the two mold surfaces serving as an edge enclosure for a casting zone. A port in the gasket is provided for feeding casting fluid such as methyl methacrylate. Casting is carried out by applying a pressure to the exterior of the two mold surfaces thereby sealing them against the gasket, filling the casting zone, and effecting polymerization and cure by passing heated water through the temperature control cell.

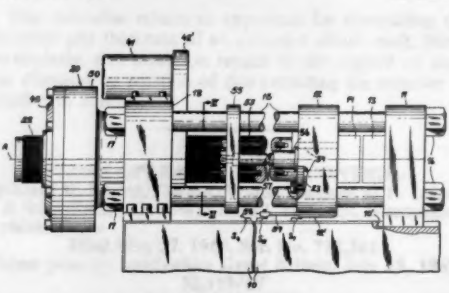
A liquid plastic feed system is mounted on the frame above the casting zones and includes a plurality of charge vessels connected to a common vacuum producing source and to a common source of liquid plastic, and manifolded to one another at their lower ends to equalize the plastic charge in each vessel. Each vessel is connected via tube to one of the casting zones.

3,579,739
APPARATUS FOR FORMING MOULDING COMPONENTS
James Edwin Henry Cosier, Northolt Park, Middlesex, England, assignor to Her Majesty's Postmaster General, London, England
Filed May 24, 1967, Ser. No. 659,247
Claims priority, application Great Britain, May 25, 1966, 23370/66
Int. Cl. B29f 1/00
U.S. Cl. 18—30 4 Claims



A method of and apparatus for sealing together certain component parts of a submarine cable repeater housing. The casing of the housing is closed by a bulkhead which is sealed to the casing by injection moulding polythene round cooperating surfaces on both casing and bulkhead. The apparatus comprises a moulding machine having several moulding cylinders each with a piston and having at least one injection nozzle.

3,579,740
MECHANISM FOR CLOSING AND OPENING INJECTION MOLDS
Herbert Rees, Toronto, Canada, assignor to Husky Manufacturing and Tool Works Ltd., Toronto, Ontario, Canada
Filed Aug. 21, 1968, Ser. No. 754,181
Int. Cl. B29f 1/00
U.S. Cl. 18—30 12 Claims



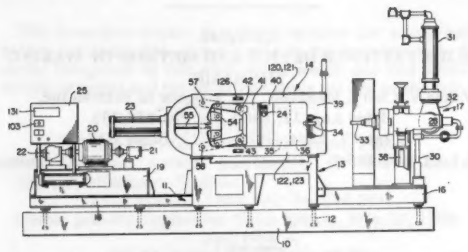
The movable platen of an injection molding machine is rigid with a nonrotatable lead screw whose rear end, remote

from this platen, is engaged by a rotatable drive nut at a location beyond the tie rods on which the platen slides. The machine frame, supporting the fixed platen with reference to which the movable platen is displaceable, carries a motor which can be reversibly operated to turn the nut in either direction for respectively advancing and retracting the movable platen; a cylinder at the rear of the frame carries an axially movable piston which, upon a stopping of the motor in the mold-closed position, is brought to bear under hydraulic pressure against the nut to clamp the mold between the platens against the tie bars anchored to the frame.

3,579,741
MACHINE AND CLAMP FORCE CONTROL SYSTEM THEREFOR

William H. Schwartz, University Heights, Ohio, assignor to Lester Engineering Company, Cleveland, Ohio

Filed Nov. 4, 1968, Ser. No. 773,237
Int. Cl. B29f *1/06*
U.S. Cl. 18—30 **18 Claims**

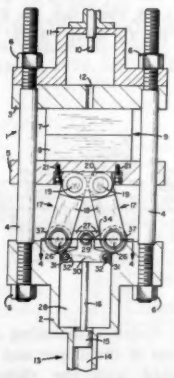


A machine such as a diecasting or injection molding machine having a frame with a bed and movable die plate supporting relatively movable molds or dies, such molds or dies being closed by a clamp cylinder to obtain a clamping tonnage, die height adjustment which is operative to control the relative position of the relatively movable dies or molds, and a control system which measures the force or tonnage exerted by the clamp and compares the measured tonnage against a preset or predetermined tonnage which then automatically energizes the die height adjustment mechanism so that the clamp tonnage will be substantially the same and correct for each cycle of operation of the machine and will not vary due to mold growth or shrinkage as temperatures change.

3,579,742
CLAMPING MECHANISM FOR MOLDING MACHINE

Vincent H. Muttart, 902 Rockaway Drive, Placentia, Calif.

Filed Dec. 5, 1968, Ser. No. 781,499
Int. Cl. B29f *1/00*
U.S. Cl. 18—30 **9 Claims**

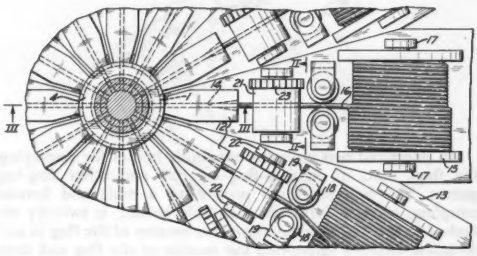


In a molding machine, a pair of toggle mechanisms, each of which includes a pair of toggle links connected between a moveable platen and a reciprocating piston. The toggle joint includes a roller which cooperates with a stationary, straight, angular wedge surface to impart a frictionless wedging action to the platen during movement of the toggle joint. A centering guide attached to the piston insures linear motion thereof.

3,579,743
APPARATUS FOR MAKING STATORS FOR ROTARY ELECTRIC SWITCHES

Mogens W. Bang, Ridgway, Pa., assignor to Stackpole Carbon Company, St. Marys, Pa.

Division of Ser. No. 698,015, Jan. 15, 1968, Pat. No. 3,538,602, filed June 30, 1970, Ser. No. 51,153
Int. Cl. B29d *3/00*
U.S. Cl. 18—36 **8 Claims**

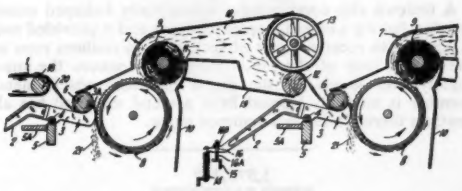


A plurality of wires are fed radially inward toward a common central point and then are stopped a predetermined distance from it. Then a rigid ring of insulating material, concentric with the same point, is molded around the wires near their inner ends, after which the wires are severed a short distance from the outside of the ring. The short lengths of wire left embedded in the ring project from the inside to form electric contact pins, and project from the outside to form electric terminals. The severing of the long wires may be done by lifting the mold, in which the wires are embedded in the insulating ring, to cut the wires where they emerge from wire-guiding means around the mold.

3,579,744
APPARATUS FOR SEPARATING FIBERS

William C. Menzies, Jr., Charlotte, N.C., assignor to Atlantic Wool Combins Co., Charlotte, N.C.

Continuation-in-part of application Ser. No. 472,974, July 19, 1965, now abandoned. This application Nov. 14, 1967, Ser. No. 687,415
Int. Cl. D01b *3/00*
U.S. Cl. 19—97.5 **1 Claim**

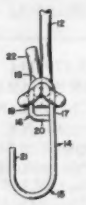


The invention relates to apparatus for separating a specialty fiber such as cashmere from its natural guard hair. The organization employs an air baffle and rotating comb and brush cylinders to create an air flow about the comb cylinder which transports the desired "down" fibers to a collecting chamber, but which rejects the undesirable guard hair.

3,579,745
FLAG FOOTBALL BELT DEVICE
Porter C. Wilson, 320 E. Elvira, Tuscon, Ariz.
Filed Mar. 24, 1969, Ser. No. 809,890
Int. Cl. A44b *21/00, 17/00*
U.S. Cl. 24—73 **5 Claims**

An improved belt mounted separable holder for displaying the flags used in playing flag football and other flag-tag games. The belt anchored portion of a male and female coupling, used to form the separable holder, is swivelly attached to the belt so as to allow free motion of the flag in any direction thereby improving the motion of the flag and then adding an element of unpredictability to play.

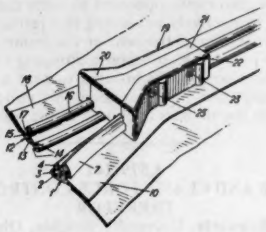
3,579,746
TIE-DOWN CLIP
James Marik, Tallmadge, Ohio, assignor to Marik Spring Inc., Summit, Ohio
Filed Feb. 20, 1969, Ser. No. 801,111
Int. Cl. F16g *11/14, 45/00*
U.S. Cl. 24—131 **3 Claims**



A tiedown clip comprising a substantially J-shaped metai member having a closed loop at its upper end is provided and is adapted to receive a pair of sections of a resilient rope in the closed loop of the metal member to secure the rope rapidly and snugly to the metal member, which metal member is normally formed from a metal wire and has all portions thereof lying in a common plane.

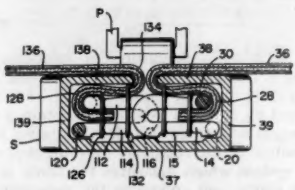
3,579,747
STRIP FASTENERS
Edwin L. Hawley, Sittingbourne, Kent, England, assignor to E.P.S. (Research & Development) Limited, Sittingbourne, Kent, England
Filed Jan. 21, 1969, Ser. No. 792,491
Claims priority, application Great Britain, Feb. 1, 1968, 5273/68
Int. Cl. A44b *19/14*
U.S. Cl. 24—201 **5 Claims**

In a slide fastener wherein a barbed rib of a male strip is arranged to interlock with a barbed jaw of a female strip, the jaw of the female strip is closed by the slider by means of a locking strut which is hinged to the female strip over one of



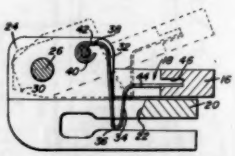
the barbed fingers which defines the jaw, the locking strut being firmly engageable by a recess in the one barbed finger.

3,579,748
SLIDE FASTENER DEVICE AND METHOD OF MAKING THE SAME
Walter V. Chery, Meadville, Pa., assignor to Textron Inc.
Filed Aug. 22, 1969, Ser. No. 852,331
Int. Cl. A44b *19/10, 19/32;* **D05b** *3/12*
U.S. Cl. 24—205.1 **11 Claims**



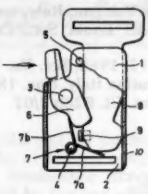
A slide fastener device having a filamentary stringer made of plastic material constructed with a series of head portions interconnected with a series of heel portions by spaced leg elements, is attached to a carrier tape by securing threads which include one set of threads passing through one portion of the tape and with a second set of threads passing through another portion of the tape.

3,579,749
ZIPPER SAFETY FASTENER
Elmer Holman, 1005 Hill St., Dallas, Oreg. 97338
Filed Oct. 28, 1969, Ser. No. 871,920
Int. Cl. A44b *19/30*
U.S. Cl. 24—205.14 **5 Claims**



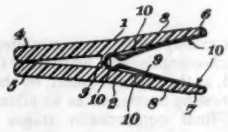
A zipper safety fastener including a toggle mounted pivotally on the slider of the zipper and a spring-type catch operatively associated with the slider and toggle and releasably engaged with the interlocking fastener elements of the zipper to automatically retain the slider in adjusted position when the toggle or handle on the slider is released.

3,579,750
LOCK FOR SAFETY BELTS
Erich Carbon, Fallersleben, and Wolfgang Wagner, Weyhausen, Germany, assignors to Volkswagen Aktiengesellschaft, Wolfsburg, Germany
Filed Oct. 10, 1969, Ser. No. 865,452
Claims priority, application Germany, Oct. 15, 1968, P 18 03 151.1
Int. Cl. A44b *11/26*
U.S. Cl. 24—230 2 Claims



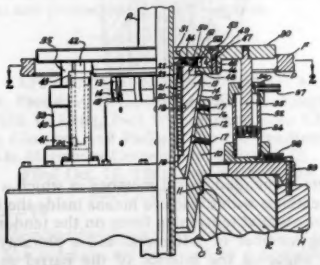
The invention relates to a lock member for safety belts having a locking link and a spring in the member with the spring composed of two portions of which one end abuts a release actuator and the other end abuts the end of the belt.

3,579,751
CLIPS USEFUL IN THE MEDICAL FIELD
Lucien Julienne Arthur Jonckheere, 88 The Gardens, Bedfont, Middlesex, England
Filed Apr. 15, 1969, Ser. No. 816,291
Claims priority, application Great Britain, May 30, 1968, 26012/68
Int. Cl. A44b *21/00*; A61b *17/08*
U.S. Cl. 24—252 1 Claim



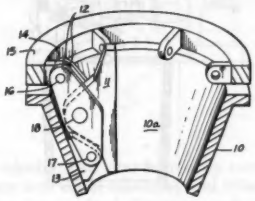
Spring clip of nontoxic plastic material for medical use consisting of an integral one-piece body having two similar rigid arms, one superimposed over the other, which are joined together intermediately by a resilient waist piece acting as a fulcrum, the adjacent pair of arm ends at one extremity being mating gripping jaws, the other pair of ends being usable for finger operation for pressing together so as to open the jaws, and a spring interposed between the finger-pressing ends to force the jaw ends together, when the finger pressure is relaxed, into a mutual gripping position.

3,579,752
AUTOMATIC ROTARY SLIPS
Cicero C. Brown, 5429 Sturbridge Drive, Houston, Tex.
Filed Apr. 9, 1970, Ser. No. 26,841
Int. Cl. F16l *7/00*
U.S. Cl. 24—263 7 Claims



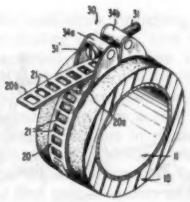
Automatic slips mountable in a rotary table for gripping and releasing drill pipe or casing being run through the table and for rotating the pipe when desired. The mechanism includes a slip spider which is raised and lowered by fluid pressure operated pistons and is held in a balanced position by telescopic supports mounted on the rotary table housing in a symmetrical arrangement about the pistons.

3,579,753
PIPE-GRIPPING APPARATUS
Dale H. Pryor, Houston, Tex., assignor to Youngstown Sheet and Tube Company, Youngstown, Ohio
Filed Mar. 9, 1970, Ser. No. 17,778
Int. Cl. F16l *7/00*
U.S. Cl. 24—263 7 Claims



This invention relates to a new type of pipe-gripping apparatus wherein pipe-engaging slips are carried by linkage elements which are supported at one end by shoes engaging a slip bowl and at the other end by a floating ring, resulting in the frictional forces between the shoes and the bowl being less than those between the slips and the pipe so that the slips are able to retain the pipe by friction alone and without the aid of knurls, teeth, serrations, or the like on the slips.

3,579,754
COMPRESSION BAND
Hans Oetiker, Oberdorfstrasse 21, Horgen, Switzerland
Filed Apr. 1, 1969, Ser. No. 811,784
Int. Cl. B65d *63/00*
U.S. Cl. 24—279 26 Claims



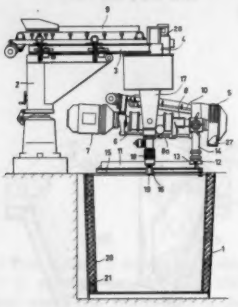
A compression band which includes a perforated band adapted to be tightened over a hoselike object by means of a closure mechanism consisting of two closure parts movable relative to one another; one end of the band is looped around one of the two closure parts while the other end of the band is threaded through openings formed in the two closure parts and is held in position by the engagement of hooks at the other closure part engaging in the perforation apertures, the closure mechanism is then tightened by means of a machine screw or the like.

3,579,755

SLINGER APPARATUS FOR LINING THE INTERIOR OF A VESSEL

Gerhard Blankenhorn, Rheinstrasse 20, Friedrichstal, and Gunter Muller, Turmbergstrasse 16, Karlsruhe-Durlach, Germany

Filed May 20, 1968, Ser. No. 730,286
Claims priority, application Germany, Oct. 4, 1967, P1,583,528.6
Int. Cl. B28b *1/00*
U.S. Cl. 25—1R 19 Claims



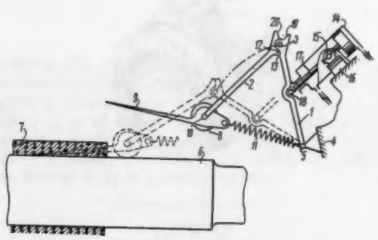
Slinger apparatus for lining the interior of a vessel. The apparatus includes a support for holding the vessel, an applicator head for slinging the material with which the vessel is to be lined, and a support for holding the applicator head, either the vessel support or the applicator head support providing a means for movably supporting the vessel or applicator head, respectively. The apparatus also includes means for producing relative motion between the applicator head and the vessel and a means having a configuration matching that of the contour of the mouth of the vessel for guiding the applicator head, during the relative movement between the applicator head and the vessel, along a path matching that of the contour of the vessel.

3,579,756

DEVICE TO FACILITATE REMOVAL OF ASBESTOS-CEMENT PIPES FROM THE MANDREL IN A PLANT FOR MANUFACTURE OF SUCH PIPES

Leonid Mikhailovich Gurevich, ulitsa Gor Kogo,5,kv.4, Moscow, U.S.S.R.

Filed May 1, 1969, Ser. No. 820,912
Int. Cl. B28b *21/42*
U.S. Cl. 25—30 2 Claims



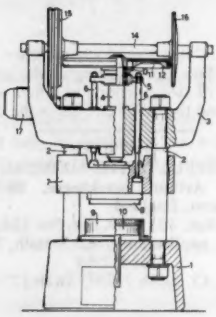
A device to facilitate removal of asbestos-cement pipes from a mandrel in a plant for manufacture of such pipes, and comprising two single-arm levers hinged to each other and to an upright. The free end of the lever which is not connected to the upright is provided with a needle, which is essentially a double-arm lever, and a roller whose axes of turning and rotation are respectively aligned one with the other. The inoperative end of the needle is connected to the joint connecting the levers with the upright through the intermediary of springs. Hinged to said upright is a power cylinder capable of turning in the plane of movement of the levers. The cylinder is hinged to a lever abutting the upright, and imparts motion to the levers. The levers moving, the roller rolls over a cam which is essentially a mandrel on which said asbestos-cement pipe is formed.

3,579,757

FLY PRESS FOR PRODUCING CERAMIC TILES

Aurelio Mingotti, Imola Bologna, Italy, assignor to S.A.C.M.I. Cooperativa Meccanici Imola Soc. Coop. A.R.L., Imola Bologna, Italy

Filed Nov. 12, 1968, Ser. No. 774,866
Claims priority, application Italy, Nov. 18, 1967, 22856A/67
Int. Cl. B28b *3/02*
U.S. Cl. 25—45 6 Claims



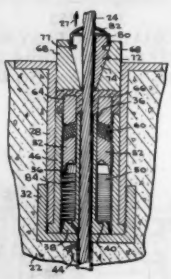
A fly press for manufacturing ceramic tiles or like articles is disclosed, which comprises an additional flywheel capable of being engaged, at the proper instant, by the usual flywheel solid with the pressing screw, so as to effect the moulding, deaerating and final compression stages as single step process.

3,579,758

EXPLOSIVE TENDON-TENSIONING MEANS

James L. Regan, Hayward, Calif. (409 Dunkel St., Fairbanks, Alas. 99701)

Filed Aug. 22, 1969, Ser. No. 852,217
Int. Cl. E04g *21/12*
U.S. Cl. 25—118T 10 Claims

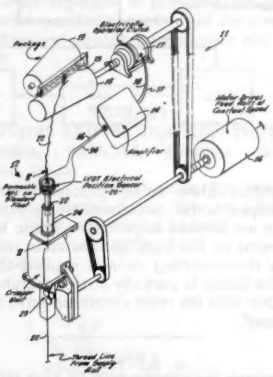


A concrete embedded barrel member in which a reinforcing tendon extends with explosive means inside the barrel for exerting a substantial tensioning force on the tendon through a cushioning member of soft metal and a plurality of apertured discs engaging the interior of the barrel so that the discs serve to retain the tendon in permanent tensioned condition.

3,579,759
TRELLIS UNIT FOR MAKING OF BEAMS
Giorgio Zuccolo, Via Arrigoni, Peraga di Vigonza, Padova, Italy
Filed Dec. 11, 1967, Ser. No. 689,631
Claims priority, application Italy, Dec. 13, 1966, 66,631/66
Int. Cl. E04g *9/10*
U.S. Cl. 25—131.6 **3 Claims**

A construction trellis unit for the formation and setting up of beams and the like in cement conglomerate, consists of a two-sided reticular framework movable longitudinally or transversely to its axis by bearing rollers. A metal form with movable walls can be slid into the framework for effecting the castings of conglomerate. When completed, the castings are lowered directly upon bridge bearings by hoists movable upon the upper booms of the trellis and prior to the withdrawal of the movable form.

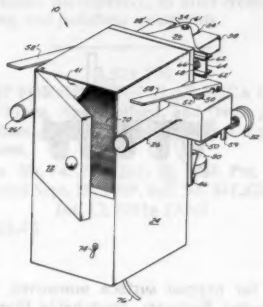
3,579,760
TEXTURIZING APPARATUS
Ralph A. Caneer; William J. Anderson; Bert B. Morgan, Asheville, and Jerry M. Goodman, Swannanoa, N.C., assignors to Northrop Carolina, Inc., Swannanoa, N.C.
Filed June 16, 1969, Ser. No. 833,602
Int. Cl. D02g *1/12*
U.S. Cl. 28—1.7 **4 Claims**



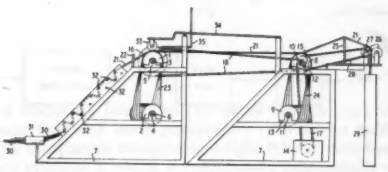
Method and apparatus useful in the textile art for maintaining the uniformity of a filament in a crimping facility in which the facility functions to continuously monitor the level of crimped material in a crimping chamber, thereby assuring a constant and predetermined level therein.

3,579,761
APPARATUS FOR YARN REMOVAL
Harvey R. Plonsker, Greenville; Reuben F. Vaughn, Seneca, S.C.; Felix C. Lang, Port Washington, Wis.; Christoph W. Aurich, Clemson, and Philip A. Bowie, Pendleton, S.C., assignors to Maremont Corporation, Chicago, Ill.
Filed Oct. 16, 1969, Ser. No. 866,909
Int. Cl. D03d *45/58*
U.S. Cl. 28—19 **10 Claims**

Yarn underwindings upon the spindles of a textile-spinning frame or like machine are removed by a portable apparatus releasably connected to the machine for guided movement longitudinally of its spindle rail. Yarn is dislodged from the spindles by a rotatable disclike member mounted for lateral and axial tilting movement, and having a smooth annular surface engageable with the rotating spindles. Dislodged yarn is withdrawn by suction into a collection chamber of the apparatus, from which it can later be readily removed. The apparatus operates with equal efficiency and effectiveness when moved in either longitudinal direction, and can be quickly connected to and disconnected from a spinning frame.

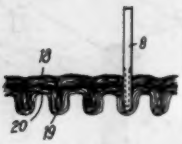


3,579,762
COLD DRAWING OF NYLON FILAMENTS
Donald I. MacKey, 33 Forest Road, and Terance Donald MacKey, R. R. 4, Galt, Ontario, Canada
Filed Dec. 27, 1968, Ser. No. 787,333
Int. Cl. D02j *1/22*
U.S. Cl. 28—71.3 **7 Claims**



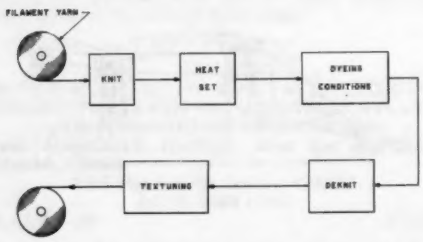
An apparatus for cold-draw stretching at least one tow of nylon filaments including a frame, first and second pairs of spaced rollers mounted for rotation transversely of said frame, said second pair of rollers being spaced from said first pair of rollers in a direction longitudinally of said frame, said rollers defining a path in which a tow of said yarn passes around said first pair of rollers in a plurality of loops and around said second pair of rollers in a plurality of loops, said loops being spaced axially along said rollers such that said tow passes to said first pair of rollers and leaves said second pair of rollers adjacent one end thereof and passes between said pair of rollers adjacent the other end thereof, said second pair of rollers being adapted to rotate at a peripheral speed higher than said first pair of rollers whereby said tow is stretched during its passage between said pairs of rollers, the axes of rotation of the rollers in each of said first and second pairs of rollers being horizontally inclined such that the point of intersection of the axes of rotation of said first pair of rollers is axially remote from the point of intersection of the axes of rotation of said second pair of rollers whereby the tow may be passed to said first and second pair of rollers at a point remote from said point of axial intersection and removed therefrom at a point adjacent said point of axial intersection with reduced bunching of said loops around said first and second pairs of rollers.

3,579,763
METHOD OF NON-WOVEN CLOTH MANUFACTURE
Francois Noel Sommer, Paris, France, assignor to Sommer S. A., Paris, France
Filed Apr. 24, 1967, Ser. No. 633,073
Claims priority, application France, Apr. 27, 1966, 59,330
Int. Cl. D04h 18/00
U.S. Cl. 28—72.2 14 Claims



A process for napped surface nonwoven web of interturned continuous filaments. Stretchable filaments are employed as starting material to form a web and various of the filaments are then forced through the web surface and stretched in the process to form loops on one surface of the web.

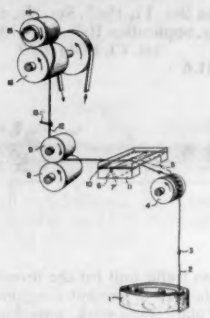
3,579,764
PROCESS FOR PRODUCING TEXTURED YARNS
William H. Kieffer, Summit, N.J., assignor to Indian Head Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 758,677, Sept. 10, 1968, now abandoned. This application Feb. 26, 1969, Ser. No. 802,640
Int. Cl. D02g 1/20
U.S. Cl. 28—72.11 10 Claims



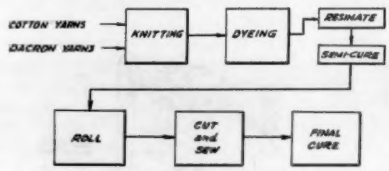
A process for producing textured yarns from synthetic fiber yarns including the steps of knitting the yarn, heating the knit yarn to stabilize it prior to dyeing, dyeing the yarn, unraveling the dyed yarn and texturing the dyed yarn. The resulting yarns exhibit combinations of bulk and uniformity which are superior to those previously available commercially.

3,579,765
METHOD OF OPENING CRIMPED YARN
Jannes Eshuis, Klingelbeekseweg 11, and Horatius Tjebbes, Oude Kraan 24-Ia, Arnhem, Netherlands assignors to Algmene kunstzijde unie N.V. Arnheim, Netherlands
Filed Aug. 6, 1968, Ser. No. 750,596
Claims priority, application Netherlands, Aug. 12, 1967, 6,711,131
Int. Cl. D04b 19/00
U.S. Cl. 28—72.16 10 Claims

A process for opening a crimped synthetic yarn made up of a number of filaments which comprises passing the crimped yarn through a relaxation zone in which the yarn is not under any significant tension and immediately thereafter applying a frictional force to the yarn to displace the filaments relative to one another and thereby open the yarn. An apparatus for carrying out this process is also disclosed.

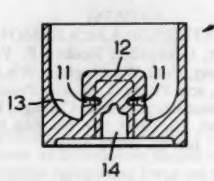


3,579,766
PROCESS FOR MANUFACTURING PRESS-FREE, RESINATED, DOUBLE-FACE, INTERLOCK KNIT FABRIC
Emanuel M. Feinberg, 64 Genesee Blvd., Atlantic Beach, N.Y.
Filed Aug. 31, 1967, Ser. No. 664,675
Int. Cl. D06c 27/00
U.S. Cl. 28—74 3 Claims



This invention relates to the process for providing a permanently shaped fabric. A resin resistant yarn and resin absorbing yarn are knitted to provide a fabric having the resin absorbing yarns on the back and the resin resistant yarns on the face. A thermosetting resin is applied to the absorbing yarns and the fabric is partially cured, thereby providing the garment fabric with the resin absorbing yarns along the inside surface thereof.

3,579,767
METHOD FOR FORMING FLASH HOLES IN CARTRIDGE CASES
Otto E. Reider, Etobicoke, Ontario, Canada, assignor to General Impact Extrusions (Manufacturing) Ltd., Toronto, Ontario, Canada
Filed June 2, 1969, Ser. No. 829,280
Int. Cl. B23p 15/22
U.S. Cl. 29—1.3 6 Claims



A method of forming flash holes in cartridge shells wherein the holes are impact punched rather than drilled. It has been

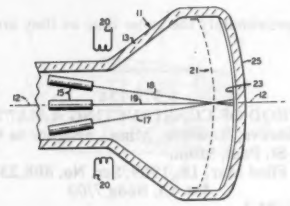
discovered that these holes can be impact punched where the shell metal has a difference of at least 5 percent between its yield strength and its ultimate tensile strength, with an attendant substantial saving in time and cost over drilling.

3,579,768

METHOD OF FABRICATING CATHODE RAY TUBE SCREEN

Glen A. Burdick, Waterloo, N.Y., assignor to Sylvania Electric Products Inc.

Division of Ser. No. 605,783, Dec. 29, 1966, Pat. No. 3,509,802, filed Aug. 19, 1969, Ser. No. 851,381
Int. Cl. H01j *9/18*
U.S. Cl. 29—25.13 5 Claims



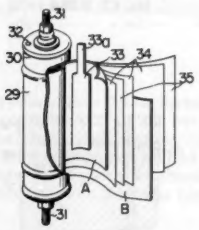
A method for providing a tri-dot patterned color cathode ray tube screen having phosphor patterns of improved symmetry. The photofabricating method involves discretely refracting light for exposing a sensitized screen panel through an associated apertured mask by utilizing a predeterminately positioned optical system. A portion of the exposure light radiation is refracted therein by a modified plano-concave lens having at least one modified plano chordal portion whereby improved exposure is provided for one or more specific peripheral quadrantal portions of the screen to effect substantially improved equilateral phosphor dot pattern formation thereon.

3,579,769

CAPACITORS AND PRODUCTION THEREOF

Akira Matsushita, 1088-312, Kitakase, Kawasaki-shi, Kanagawa-ken, Japan

Filed Feb. 19, 1969, Ser. No. 800,506
Claims priority, application Japan, Feb. 19, 1968, Feb. 19, 1968, 43/10241;43/12483
Int. Cl. H01g *13/00*
U.S. Cl. 29—25.42 11 Claims



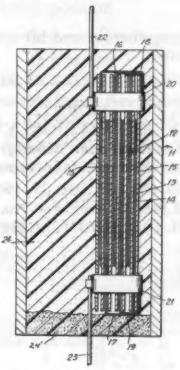
Capacitors, each having a high-molecular dielectric layer electrode-positioned on at least one of two opposite electrodes thereof and having various excellent properties such as heat-resistivity, moisture-resistivity, high breakdown voltage, and high insulating resistivity, are adaptable to mass-production, miniaturization, and large capacitances. The high-molecular dielectric layer is manufactured by the method of passing a direct current on a current obtained by superposition of a direct current and an alternating current or a rectified current between a cathode and the electrode to be deposited thereon with said dielectric layer, said electrode being used as an anode, in an electrodepositing bath consisting of a resin emulsion or resin water solution containing as its main ingredient an anionic poly-high-molecular electrolytes or in an electrode positioning bath consisting of said emulsion or water solution in which a dielectric material consisting of powdery fine crystal particles or corpuscles is mixed, thereby to deposit a high-molecular dielectric layer on said anodic electrode, and subjecting said electrodeposited layer, successively, to after-treatments such as washing, drying, and polishing treatments.

3,579,770

METHOD OF FORMING TUBULAR MICA CAPACITOR

William H. O'Mara, New Bedford, and Owen J. Wood, Mattapoisett, Mass., assignors to Aerovox Corporation, New Bedford, Mass.

Division of Ser. No. 743,787, July 10, 1968, Pat. No. 3,522,493, filed Sept. 29, 1969, Ser. No. 861,824
Int. Cl. H01g *13/00*
U.S. Cl. 29—25.42 2 Claims



This disclosure relates to the art of electric capacitors of the mica type and more particularly relates to a method of forming a capacitor comprising a rigid tubular member of insulating material in which is positioned a substantially rectangular mica capacitor section that is retained in fixed position with terminal leads protruding from opposed ends of the tubular member by filling the latter with a thermosetting resin.

3,579,771

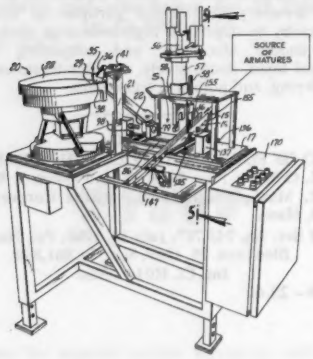
MACHINE FOR AUTOMATICALLY ASSEMBLING ARMATURE CORES AND COMMUTATORS THEREFOR

Thomas L. Schuette, Osseo; Melvin J. Straub, Minnetonka; Pierre Dumas, and Peter F. Aurich, Minneapolis, Minn., assignors to Possis Machine Corporation, Minneapolis, Minn.

Filed Feb. 20, 1969, Ser. No. 801,084
Int. Cl. H02k *15/02*
U.S. Cl. 29—33 13 Claims

Feeding mechanism successively brings armature cores and commutators therefor to an assembly station where they are held in coaxial endwise spaced relationship and where rotation imparting mechanism brings each armature core and commutator pair into correct angular relationship. A ram then pushes the commutator axially towards the armature core with the terminal tangs on the commutator facing the core, and presses it onto the shaft thereof, moving the commutator through a die which straightens tangs that may be askew. The tank straightening die has a round hole that slideably accepts the commutator, and longitudinally extending circumferentially spaced parallel grooves that slideably accommodate the tangs. When the commutator reaches proper position on the armature shaft, and while still in the die, a tang-shaping member having circumferentially spaced

parallel fingers, one for each tang, telescopes over the commutator, each finger moving along one of the grooves to engage under the tang therein and lift it into contact with the bottom of the groove.

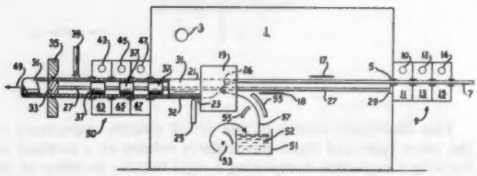


3,579,772

MANUFACTURE OF INTERIORLY COATED TUBING

Brian C. Coad, Fairfield, near Bromsgrove, Warc., England, assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 605,837, Dec. 29, 1966, Pat. No. 3,457,626, filed Jan. 27, 1969, Ser. No. 852,125
Int. Cl. B23p *3/12*; B21c *27/08*
U.S. Cl. 29—33 5 Claims



This disclosure relates to continuously drawing a precleaned strip of metal past heating and evaporating means for the coating material and deforming the strip to bring the margins of the strip together to form an open-seamed, open-ended tube. The margins of the open seam are welded after the strip has been folded. The evaporated coating material enters the tube through its open end where it is being formed from strip to tube. As a result the inside surface of the tube has evaporated material condensed upon it in solid form. The condensate covers all of the inside surface, including also the welded seam. The inside-coated tube is cooled and passed through an appropriate finishing die or the like.

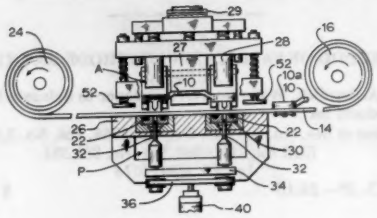
3,579,773

HANDLE ATTACHING APPARATUS AND METHOD

Milton Zysman, Toronto, Ontario, Canada, assignor to Convex Limited, Nassau, Bahamas

Filed Feb. 26, 1969, Ser. No. 802,358
Int. Cl. B68g *7/12*
U.S. Cl. 29—91 11 Claims

Apparatus for simultaneously attaching ventilator handles to mattress border and puncturing the border in registration with the handle vents. The apparatus comprises a bed over which border material is movable, a press movable downwardly towards the bed for attaching successive handles to the upper surface of the border and a pair of rotary cutters below the bed movable upwardly through passageways therein to puncture the border in registration with the handle vents at approximately the same time as they are attached as aforesaid.

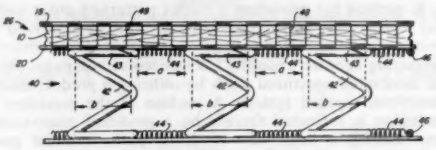


3,579,774

METHOD OF CONSTRUCTING A MATTRESS

Robert N. Shreve, Roseville, Minn., assignor to Conwed Corporation, St. Paul, Minn.

Filed Mar. 18, 1969, Ser. No. 808,232
Int. Cl. B68g *7/00*
U.S. Cl. 29—91.1 14 Claims



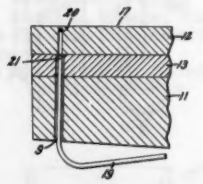
An extruded plastic net, having heavy strands in one direction and lighter strands in the other direction, is used to replace the two previous elements i.e. (1) a wirerope spring-bridging unit, and (2) a cotton scrim in a mattress construction thus permitting sewing of the spring-bridging unit to the cushioning material.

3,579,775

TOOL SURFACE TEMPERATURE MEASURING APPARATUS

Gerald J. Carlson, Scotia, N.Y., assignor to General Electric Company

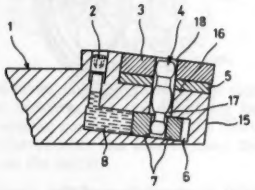
Division of Ser. No. 632,621, Apr. 21, 1967, Pat. No. 3,486,378, filed Apr. 3, 1969, Ser. No. 830,168
Int. Cl. B26d *1/00*
U.S. Cl. 29—96 4 Claims



Opto-electronic apparatus for hot spot temperature measurement by indirect viewing of a heated surface of a cutting tool through a small diameter hole therein which terminates close to the hot spot surface. A first end of a light guide within the hole views the radiant energy emitted from the heated end surface of the hole during a cutting operation and the remote second end directs the radiant energy to a ratio pyrometer comprising a rotating disc, two infrared filters and a first photocell. The photocell output is a series of electrical

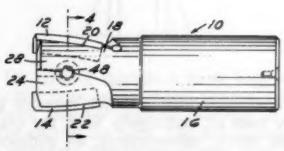
pulses of first and second amplitude representing the intensity of the radiant energy in the two spectral bands determined by the filters. Opto-electronic circuitry separates the pulses into two separate pulse trains comprising the first and second amplitude pulses, detects, and compares the peak amplitude of the pulses to obtain a ratio of pulse amplitudes. The hot spot temperature is determined from a known correlation of temperature versus pulse amplitude ratio.

3,579,776
TOOLHOLDER ASSEMBLIES
Wlajko Mihic, Tegnervagen 9, 802 28 Gavle, Sweden
Filed Nov. 18, 1968, Ser. No. 776,443
Int. Cl. B26d *1/00*
U.S. Cl. 29—96 **4 Claims**



A toolholder assembly incorporates a body which at one end has a recess for receiving an indexable cutting insert. A bore for a two-armed lever which is pivotally connected to the body extends from the recess in the toolholder body, and one end of the lever cooperates with the cutting insert, while the other end of the lever cooperates with a piston which is movable in the body. The piston is under the action of a pressure medium which is contained in a hollow space in the body and acted upon by a pressure actuating member movable into and out of the space.

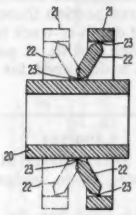
3,579,777
HELICAL END MILL
Vistor Milewski, Troy, Mich., assignor to The Valeron Corporation
Filed Mar. 10, 1969, Ser. No. 805,442
Int. Cl. B26d *1/12*
U.S. Cl. 29—105 **8 Claims**



A cutting tool with helical slots for replaceable helix blades that fit the slots, a common kerf or slit between the blade slots which follows their helix angle and provides a bifurcated shank with opposite sides of each slot wall on opposite shank parts, and a cross screw for drawing the shank parts together to close the blade slots and hold the helix blades in the slots for metal cutting use.

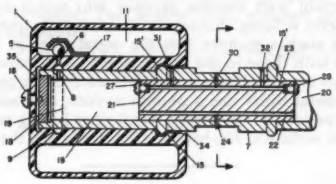
3,579,778
UNITARY BI-STABLE CODE WHEEL FOR MECHANICAL CONVEYORS AND SORTING APPARATUS
Peter T. DiPaolo, Jr., Ridley Park, and Joseph C. Carbine, Wyncote, Pa., assignors to Burroughs Corporation, Detroit, Mich.
Filed Aug. 13, 1969, Ser. No. 851,774
Int. Cl. B60b *5/02*
U.S. Cl. 29—110 **10 Claims**

This disclosure relates to a code wheel for a conveyor system such as employed in a sorting apparatus for letters and other articles. The wheel is of unitary construction and has a rim that can be translated from one to the other of two stable positions. The connecting support for the rim may be either a plurality of pivotally mounted spokes or an approximately conical web where the length of the respective spokes



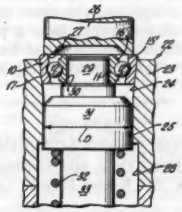
or of the conical element is greater than the difference between the rim radius and the hub radius. During translation of the rim from one stable position to the other, distortion occurs either in the rim of the spoked embodiment or in the web. Material resistance to this distortion serves to urge the rim to its nearest stable position.

3,579,779
TOP ROLLER FOR TEXTILE DRAFTING DEVICES
Marcel Stein, 560 Riverside Drive, New York, N.Y.
Filed Aug. 14, 1968, Ser. No. 752,656
Int. Cl. D01h *5/74*
U.S. Cl. 29—113 **8 Claims**



A top roller for a textile drafting device, having an interior annular space is rotatably mounted on a fixed shaft. The space is in fluid communication with an axial duct in the shaft through which a compressed medium can be passed to inflate the roller. Compressed air supplied to a second axial duct in the shaft blows off dirt that may accumulate on the end of the roller.

3,579,780
METHOD OF MAKING A BEARING HAVING A FULL COMPLEMENT OF BALLS
Richard J. Matt, Simsbury, and Ronald E. Restelli, Cromwell, Conn., assignors to Textron Incorporated, Providence, R.I.
Filed Sept. 9, 1968, Ser. No. 758,358
Int. Cl. B23p *11/00, 11/02;* **B23b** *19/00*
U.S. Cl. 29—148.4 **16 Claims**



A bearing having a full complement of balls is described wherein an outer ring is made of a wrought heat-resistant alloy and provided with a depth-of-track to ball-diameter

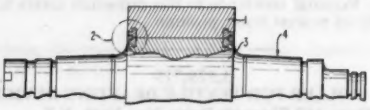
ratio of at least 1 : 10. Cobalt base and nickel base alloys or a combination thereof have been found to be particularly useful with this type of bearing. A method of making the bearing includes preassembling a bearing structure by placing a thermally expanded conical outer ring over an assembly comprising an inner ring and a full complement of balls within the inner ring face. Subsequently, the conical outer ring is compressed to bring a tapered portion thereof towards the balls and produce the desired depth-of-track to ball-diameter ratio with final radial clearance and fit. A particular selection of component parameters is described for the manufacture of the device.

3,579,781

SLEEVED ROLL AND METHOD OF MAKING THE SAME

Toshio Yaegashi, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo-To, Japan

Filed July 24, 1968, Ser. No. 747,153
Claims priority, application Japan, July 27, 1967, 43/64862
Int. Cl. B23p *11/00, 11/02*
U.S. Cl. 29—148.4 **20 Claims**



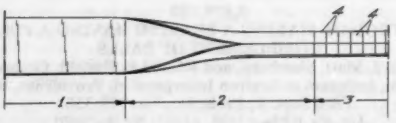
A sleeved roll which comprises a sleeve and an arbor fitted in the sleeve by means of shrink fitting wherein the arbor and the sleeve are, respectively, provided at the opposed end portions thereof with annular grooves into which metal rings having good welding characteristics are tightly fitted, respectively, in such a manner that the metal rings in the sleeve combine with those in the arbor to form a U-shaped annular ring when they are firmly secured to each other by means of deposit metal which has a smooth surface, the radial section of the grooves and the united metal rings having such a contour as to withstand slip between the sleeve and the arbor.

3,579,782

METHOD OF MANUFACTURING ROLLING BEARING COMPONENTS

Stig Lennart Hallerback, Blodboksgatan 12, Vastra Frolunda, Sweden

Filed Aug. 2, 1968, Ser. No. 749,783
Int. Cl. B23p *11/00, 17/00*
U.S. Cl. 29—148.4 **6 Claims**



A method of manufacturing rolling bearing components consisting of the steps of forming a tubular member by bending up a flat sheet and joining the sheet at confronting edges, separating the tubular member into a plurality of annular rings, and simultaneously rolling and bending at least one flange at one end of said annular ring at grooved portions formed by rolling.

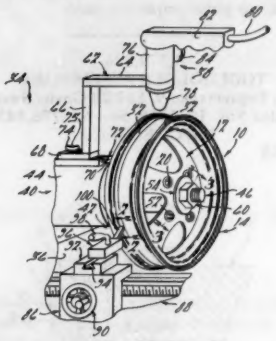
3,579,783

METHOD FOR MANUFACTURING WHEELS

Edward J. Hayes, Ann Arbor, and Stephen E. Crick, Livonia, Mich., assignors to Kelsey-Hayes Company, Romulus, Mich.

Filed July 5, 1968, Ser. No. 742,590
Int. Cl. B21d *53/26;* **B21k** *1/28, 1/42*
U.S. Cl. 29—159 **26 Claims**

A method and apparatus for manufacturing vehicle wheels wherein a structural adhesive material is applied to the rim bead seat section of the wheel rim while simultaneously rotating the wheel about its axis of rotation, the material being distributed over the bead seat section by means of a suitable tool disposed adjacent the wheel and adapted to engage the material upon rotation of the wheel, whereby the material forms a surface of constant radius from the rotational axis of the wheel and upon which an associated vehicle tire is adapted to be mounted.

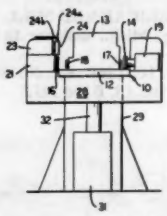


3,579,784

ENGINE BLOCK STRIPPING APPARATUS

George R. Klempner, and Sam Rosenberg, Louisville, Ky., assignors to Foundry Suppliers, Inc., Louisville, Ky.

Filed Feb. 24, 1969, Ser. No. 801,668
Int. Cl. B23p *19/00;* **B26f** *3/00*
U.S. Cl. 29—200 **3 Claims**



Disclosed is an apparatus in which movable elements engage opposite ends of, and rigidly hold, the crankshaft of a junked engine block, subsequently, an additional movable portion of the apparatus applies a force to one end of the engine block parallel to and above the crankshaft to fracture the engine block portions carrying the main crankshaft bearings. Finally, the movable elements holding the crankshaft are dropped or lowered to extract and separate the crankshaft, rods and pistons from the engine block.

3,579,785

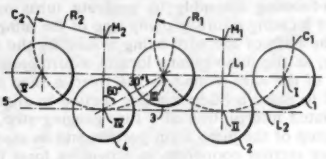
APPARATUS FOR UNITING A PLURALITY OF FIRST OBJECTS WITH A CORRESPONDING NUMBER OF SECOND OBJECTS

Lars Ingvar Hellborg, Lund, Sweden, assignor to Sobrefina S.A., Fribourg, Switzerland

Filed Apr. 8, 1969, Ser. No. 814,249
Claims priority, application Sweden, May 12, 1966, 6504/66
Int. Cl. B23p *19/00, 19/04*
U.S. Cl. 29—200 **4 Claims**

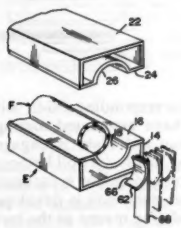
Apparatus for uniting a plurality of container bodies with outer sleeves comprises a pair of parallel spaced rotationally mounted members having pockets which receive the sleeves. The pocketed members are rotated in a step-by-step manner so as to simultaneously advance the sleeves into a spacial

configuration wherein the centers of the sleeves are located in longitudinal spaced relation along two parallel straight lines. A rotationally mounted multisided turret also rotatable in a step-by-step manner includes along each side thereof a like number of holders having the same spacial configuration



as that of the sleeves, plungers transfer the sleeves from their pockets to the holders, and the container bodies arranged with the same spacial configuration as the sleeves are then inserted in the sleeves after the sleeves have been transferred to the holders on the turret.

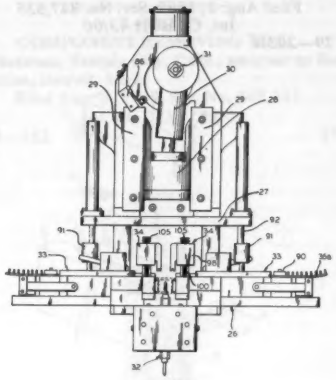
3,579,786
HOSE STRAIGHTENING DEVICE
Theodore C. Johnson, 6011 Briardall Lane, Solon, Ohio
Filed Apr. 23, 1969, Ser. No. 818,749
Int. Cl. B23p *19/00, 19/02*
U.S. Cl. 29—200 **8 Claims**



A device for holding straight a short length of normally curved semirigid hose while metal fittings of an external diameter greater than the internal diameter of the hose are forced into the ends of the hose. The device consists of a pair of clamping members somewhat shorter than the hose arranged to clamp the central portions of the hose straight, in combination with a pair of supporting fingers at opposite ends of the clamping members. The fingers are biased in a direction to straighten the ends of the hose projecting beyond the clamping members, the fingers being yieldingly supported to allow expansion of the hose ends as the fittings are forced thereinto.

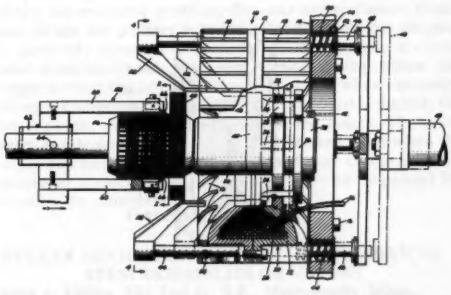
3,579,787
MACHINE FOR APPLYING LUGS OR THE LIKE TO BOBBINS OR THE LIKE
Joseph J. Cervenka, 428 E. Crescent, Elmhurst, Ill., and Marvin E. Hetzel, 177 Michaux Road, Riverside, Ill.
Filed Sept. 17, 1968, Ser. No. 760,267
Int. Cl. H05k *13/04;* **B23p** *19/04*
U.S. Cl. 29—203 **9 Claims**

Machine for applying lugs or the like to plastic bobbins or the like when the bobbins include post means and the lugs include hole means matable with the post means and collapsible means coacting with the hole means to decrease the size of the hole means and lock the lug to the bobbin, and the machine includes means feeding lugs into alignment with bobbins at a lug-applying station, means severing lugs from a strip form of lugs, means applying the lugs to the bobbins,



and means collapsing the lug collapsible means to secure the lug to the bobbin.

3,579,788
APPARATUS FOR COMPRESSING LAMINATED CORES
Harold L. Fritzsche, Fort Wayne, Ind., assignor to General Electric Company
Filed Feb. 27, 1969, Ser. No. 802,861
Int. Cl. H02k *15/00*
U.S. Cl. 29—205 **6 Claims**



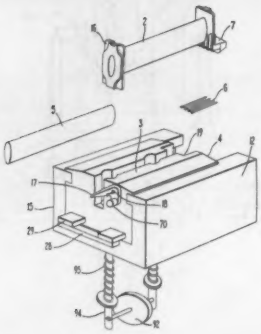
An assembly for compressing laminated articles, such as stator cores for dynamoelectric machines. There is provided an assembly including a doughnut-shaped electromagnet and a tapered nonmagnetic plug mounted within the electromagnet. A core, previously coated with a material intermixed with magnetic particles, is slipped over the plug and moved by suitable mechanical means toward the center of the electromagnet while the electromagnet is energized. The resultant magnetic field attracts the core to the center of the electromagnet. Also mounted in the assembly are spring-biased clamps which cooperate with adjustable stop members for clamping the core therebetween, thereby mechanically compressing the laminations of the core together. The magnetic field produced by the electromagnet magnetically compresses the laminations and also draws the coating material intermixed with magnetic particles to selected surfaces of the core, thereby forming an increased thickness of material on those surfaces.

3,579,789

MACHINE FOR THE MANUFACTURE OF RELAY COIL BOBBINS

Lucien Ernest Grente, and Roger Leveque, Boulogne, France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 1, 1969, Ser. No. 847,535
Int. Cl. H01r 43/00
U.S. Cl. 29—203D 9 Claims



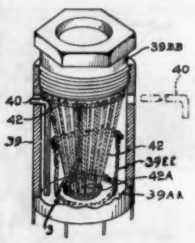
A machine is provided for manufacturing electromagnetic relays. Bare relay bobbins are introduced into the machine and these bobbins are then equipped with magnetic cores and connection prongs. Thereafter, the finished relays are ejected from the machine.

3,579,790

DEVICES AND ACCESSORIES FOR ELECTRIC ARMORED CABLES AND STUFFING TUBES

Paul M. D'Amico, 2709 S. 12th St., Philadelphia, Pa.

Division of Ser. No. 502,048, Oct. 22, 1965, abandoned, filed Oct. 31, 1958, Ser. No. 772,179
Int. Cl. H05k 13/00
U.S. Cl. 29—203 3 Claims



Devices and accessories in the form of tool means and associated equipment for the installing and servicing, including emergencywise preparation, of electric armored cables, in the form of a circular T-w wrench, a safety shield with accurate cutter grooves in a combined ring-cutter, which limits the depth in cutting the outer interstices of shielding or layers of insulation if required, and said devices also may be affixed and grouped into a piece unit for storing and ever-ready utility.

3,579,791

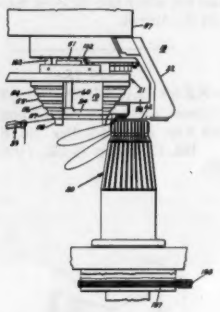
COIL DEVELOPING APPARATUS

Richard B. Arnold, Fort Wayne, Ind., assignor to General Electric Company

Continuation-in-part of application Ser. No. 748,406, July 29, 1968. This application Dec. 11, 1969, Ser. No. 884,145
Int. Cl. H02k 15/00
U.S. Cl. 29—205 13 Claims

Apparatus for developing one or more coil groups of electrically conductive wire. The apparatus includes a coil turn-forming assembly having a jump form portion and a snap out form portion. The jump form portion includes a plurality of turn-gauging steps with an interruption formed at one side. The snap out form portion is supported adjacent to the interruptions on the turn-gauging steps and includes a corresponding number of snap out winding form plates, each having a fill-in winding section for spanning one of the associated interruptions on the jump form portion.

The apparatus also includes a flyer for placing wire on the coil turn-forming assembly to generate turns and a jump means for locating a turn-gauging step of the jump form portion in the path of the wire being wound by the flyer. Concurrently, as the jump means locates a turn-gauging step in the path of the wire wound by the flyer, a snap out plate is extended to place a fill-in winding section in alignment with its associated interruption of a turn-gauging step. The turn-gauging step of the jump form portion and its associated fill-in winding section cooperate to provide a form for winding or generating turns of a predetermined length for receipt in a coil group accommodating means or device. Preferably, the coil group accommodating means is comprised of spaced curved blades defining turn receiving slots. The spaced



curved blades and corresponding fill-in winding sections of the snap out plates have associated mating curved surfaces whereby, when a snap out plate is engaged with a curved blade, the entry of the turns of a coil being generated into the corresponding turn receiving slot is facilitated by the mating curved surfaces. Thus each coil is developed directly in the coil group accommodating means as the turns for the coil are generated about the coil turn-forming assembly. Also, the jump form portion and the snap out plates may be supported for movement in essentially a vertical direction, and the curved blades are supported in alignment with the snap-out plates so that the force of gravity facilitates the removal of the turns from the coil form assembly.

Additionally at least part of the jump form portion is movable relative to the snap out portion during the turn-generating operation for selectively varying the lengths of successive turns.

A coil group is developed in the coil group accommodating means by producing a plurality of serially connected wound coils of a coil group in the coil group accommodating means. Thereafter the coil group may be inserted directly from the coil group accommodating means into preselected slots of a stator core.

3,579,792

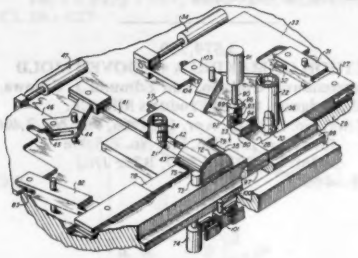
APPARATUS FOR ASSEMBLING PIECEPARTS INTO CUP-SHAPED ADAPTERS

Edward H. Craver, Clemmons, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Sept. 30, 1969, Ser. No. 862,235
Int. Cl. B23p 19/04; B23q 7/10
U.S. Cl. 29—208 7 Claims

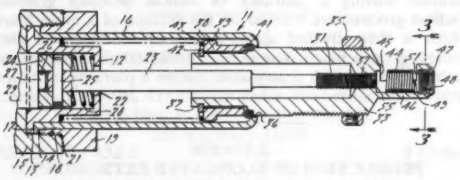
A loading apparatus assembles a ferrite core into a cup-shaped adapter. First the adapter is pushed to an assembly station to receive the ferrite core where it is accurately positioned by a slanted end of a pusher and a corner. The ferrite core is then pushed to the assembly station where it is held between a pusher and a spring-biased member in an elevated

position over the adapter. The cores are fed from a stack where a pronged member gently lowers the stack after a pusher has retracted. A spring-biased plunger at the assembly station pushes the ferrite core down into the adapter. A



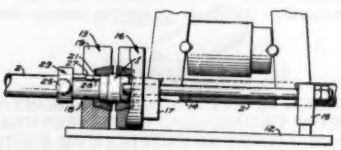
switch on the plunger senses any failure of the ferrite core to assemble into the adapter to release an ejection mechanism to drop the unassembled ferrite core and adapter from the assembly station.

3,579,793
POWER TOOL FOR THREAD INSERTS
Charles A. Williams, Highland, Mich., and Richard E. Waller, Erie, Pa., assignors to Microdot Inc., Greenwich, Conn.
Filed Sept. 24, 1968, Ser. No. 761,979
Int. Cl. B23p *19/04*
U.S. Cl. 29—240.5 **11 Claims**



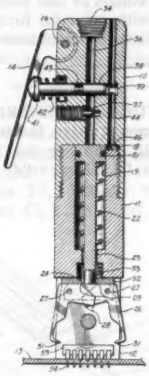
The power tool has a shaft which engages and advances an insert into an aperture of a workpiece in one direction of rotation and screws the threaded end of the shaft from the insert in the other direction of rotation. The distance of advancement of the insert and the threaded aperture of the workpiece is controlled by a stop collar that is adjustable on the exterior of the tool for causing cam means to interrupt the drive of the shaft when the insert has been advanced a required distance.

3,579,794
MEANS FOR SECURING COUPLINGS TO PIPE
Jonathan S. Powell, 11 W. State St., Pasadena, Calif.
Division of Ser. No. 678,932, Oct. 30, 1967, Pat. No. 3,477,750, filed Oct. 3, 1969, Ser. No. 863,511
Int. Cl. B23p *19/04*
U.S. Cl. 29—237 **2 Claims**



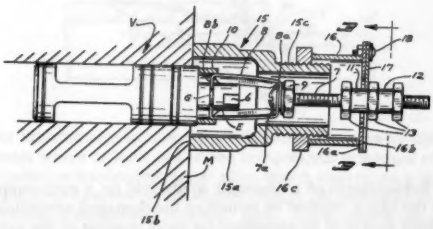
A means and method of constricting a coupling having internal teeth onto a pair of abutting pipe sections; the means comprising an assembly of split rings which may be secured around a pair of abutting pipe sections and a coupling having internal teeth initially slidable on the pipe sections, at least one of the rings containing a constricting die adapted, when forced axially over the coupling, to constrict the coupling and force the teeth into the pipe sections; a hydraulic ram being placed between a pair of rings to effect relative movement of the die and coupling and thus constrict the coupling. One embodiment involves a pair of constricting dies movable toward each other and another involving a single die and a sleeve for forcing the coupling through the die.

3,579,795
COMPONENT REMOVING TOOL
Per Aron Burman, Temple City, Calif., assignor to Burroughs Corporation, Detroit, Mich.
Filed Aug. 8, 1969, Ser. No. 848,545
Int. Cl. B23p *19/04*
U.S. Cl. 29—252 **17 Claims**



A power augmented handtool particularly useful for removing integrated circuit components from a printed circuit board is described. The tool has a body in which a plunger is movable between an extended and a retracted position. A pair of opposed, component gripping, jaws are pivotally connected to the plunger at the nose end of the tool. When the plunger is in the retracted position, the jaws are positively cammed open. While the plunger travels toward the extended position, the jaws are resiliently biased open. When the plunger is in the extended position, the jaws are positively cammed to a closed position to grip a circuit board component. A relatively strong spring biases the plunger toward the retracted position so that when the solder holding a component to a printed circuit board is melted, the jaws draw the component away from the board. The component is released when the jaws are cammed open when the plunger reaches the retracted position. Either compressed air pressure or a mechanical arrangement may be employed for extending the plunger and jaws.

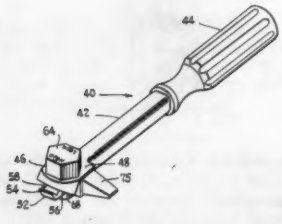
3,579,796
PULLER DEVICE FOR GENERALLY CYLINDRICAL STEM ASSEMBLIES OR VALVES
Walter A. Fillion, 705 2nd St. N.E., Minneapolis, Minn.
Filed Aug. 19, 1969, Ser. No. 851,223
Int. Cl. B23p *19/04*
U.S. Cl. 29—263 **5 Claims**



A puller device for longitudinally extracting generally cylindrical valve assemblies and the like and which have a

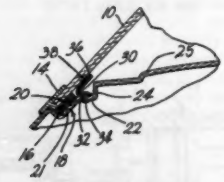
slightly protruding outer end provided with a circumferential indentation. The improved device combines the use of an elongated puller shaft having means at the inner end for grasping and interlocking with said circumferential indentation, together with an annular abutment member surrounding the inner portion of the stem and having an end for abutment against the mounting of said cylindrical assembly, and a second cooperating puller nut also surrounding said stem and disposed outwardly of the first annular member and having extended threaded interconnection therewith. The combination further requires a shiftable lock device carried by the annular puller member for selective engagement with two diminished collars or grooves provided intermediately of the elongated stem. The outer annular puller element is screw threaded inwardly against the abutment member then interlocked with one of the collars of said stem and, in operation, is screwed outwardly with powerful force to pull the stem outwardly through the first abutment member.

3,579,797
TOOL FOR REMOVING CONCENTRIC KNOCKOUTS
Frank W. Pepe, 637 Prospect Drive, Lordship, Conn.
Filed Feb. 20, 1968, Ser. No. 706,899
Int. Cl. B23p *19/04*
U.S. Cl. 29—267 **13 Claims**



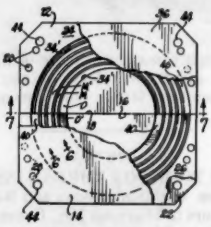
A tool for removing concentric ring knockouts from electric wire junction and terminal boxes, etc., after removal of the center disc knockout. The tool has opposed groove defining gripping means set at an acute angle relative to each other which engage opposite points on the ring knockout so as to fracture the knockout by a back and forth movement of the tool until the points of connection of the ring knockout with the rest of the box fracture.

3,579,798
METHOD OF VERIFYING THE REPLACEMENT OF A DAMAGED WINDSHIELD
William P. Henderson, 1109 Crayton Road, Naples, Fla.
Filed Feb. 13, 1969, Ser. No. 799,027
Int. Cl. B23p *7/00*
U.S. Cl. 29—401 **12 Claims**



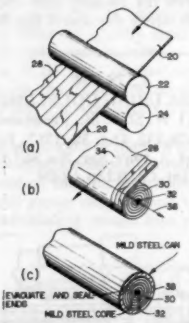
Replacement of a damaged windshield on a motor vehicle or the like is verified by removing the damaged windshield to obtain access to an identification serial number of the vehicle located immediately adjacent the windshield and then taking an impression of the vehicle serial number before installing a new replacement windshield. The impression is taken on a label which is then attached to a statement which is forwarded to an insurance company for payment. Verification of the type of replacement windshield installed is also obtained by removing a manufacturer's label from the replacement windshield and attaching the manufacturer's label to the label bearing the impression.

3,579,799
METHOD OF MAKING A GROOVED MOLD
Alvin J. Furstenburg, Chicago, and Edmund J. Kujawa, Wilmette, Ill., assignors to Felt Products Mfg. Co.
Division of Ser. No. 542,343, Apr. 13, 1966, Pat. No. 3,406,430, filed Apr. 10, 1968, Ser. No. 745,056
Int. Cl. B23p *17/00;* **B29c** *1/02*
U.S. Cl. 29—416 **9 Claims**



This invention deals with a method for producing a mold member having a plurality of helical molding grooves. Endless grooves are formed on the surface of a mold blank which is then divided along a line which intersects each endless groove twice. The divided mold blank segments are then aligned in such a way as to define a plurality of helical grooves.

3,579,800
PRODUCTION OF ELONGATED EXTRUSIONS COMPOSED OF TITANIUM BASE METAL
Robert F. Packard, Brookline, Mass., assignor to Technical Metals, Inc., Brockton, Mass.
Filed Jan. 28, 1969, Ser. No. 794,647
Int. Cl. B23p *17/00*
U.S. Cl. 29—423 **10 Claims**



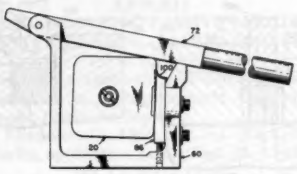
Elongated extrusions of titanium base metal are produced from billets in the form of coils of titanium base metal. In such a coil, the rolling direction of the sheet and the axis of the convolutions of the sheet are at right angles to each other. It is believed that striated roughness of the resulting extrusion is minimized because grain elongation in the rolling direction and grain elongation in the extruding (axial) direction are such that strain hardening is neutralized.

3,579,801

OPENER FOR A FILM PACK

Frank Y. Ishihara, Seattle, Wash., assignor to Leonard H. Tall, Mercer Island, Wash., fractional part interest

Filed Apr. 1, 1968, Ser. No. 717,636
Int. Cl. B23p *19/04*; B67b *7/30*; B25b *27/14*
U.S. Cl. 29—427 5 Claims



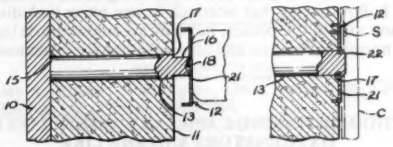
This invention is directed to a method and an apparatus for opening a film pack so as to easily and quickly remove the film from the film pack. It is necessary to remove the film from the film pack without damaging the film such as by scratching the undeveloped film or by tearing in two the undeveloped film or by allowing the film to become unraveled from the film pack and generally mixed. I have approached this problem from the standpoint of enlarging the opening in the film pack so that the undeveloped film can be removed from the film pack without substantially touching any of the body of the container of the film pack around the opening.

3,579,802

METHOD FOR INSULATING BOILER OR LIKE HOUSING WALL

Frank R. Gajovski, 4112 Swain Drive, Barberton, Ohio

Filed Dec. 2, 1968, Ser. No. 780,322
Int. Cl. B23p *11/00*
U.S. Cl. 29—432.2 5 Claims



Method and means for securing thin-webbed metalwork on boiler or like housing wall, as for retaining insulation and/or finishing sheeting thereon. Studs may have inner ends welded to housing wall by use of a stud welder. Areas of metalwork strip impacted against reduced ends of studs to punch through web, and further impaction forms heads to retain metalwork against peripheral shoulders defined by reduced ends.

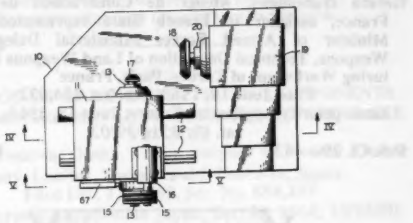
3,579,803

METHOD FOR BRINGING TWO STATIONARY GEARWHEELS INTO ENGAGEMENT WITH ONE ANOTHER ON A LAPPING OR TESTING MACHINE

Alfred Johann Lautenschlager, Zurich, Switzerland, assignor to Oerlikon-Buhrle Holding AG, Zurich, Switzerland

Division of Ser. No. 612,378, Jan. 30, 1967, Pat. No. 3,403,569, filed June 13, 1968, Ser. No. 737,789
Int. Cl. B23p *19/00*
U.S. Cl. 29—434 9 Claims

A method for bringing into engagement two gearwheels on a lapping or testing machine. The gearwheels are displaced towards one another until they come into mutual contact and in the event of the tips of two teeth contacting one gearwheel is rotated through a fraction of the tooth pitch and engagement of the two gearwheels is prevented until a tooth of one gearwheel is opposite a gap in the other gearwheel.

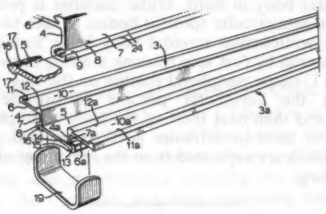


3,579,804

METHOD OF MAKING LUGGAGE CASES

Jack Slan, Toronto, Ontario, Canada, assignor to Dominion Luggage Co. Limited

Filed Nov. 19, 1968, Ser. No. 784,510
Int. Cl. B23p *19/00*, *9/00*
U.S. Cl. 29—434 9 Claims



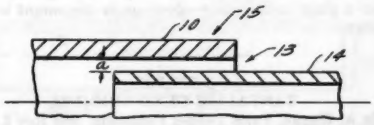
The method of obtaining an accurate interlock between opposing case sections by clamping two edge strips and a tongue strip which are to make up the confronting edges of the case sections in interfitting relation prior to bending, then bending the strips while clamped to effect matched bends and at the same time a permanent locking of the tongue strip in one of the edge strips and matched interfit with the other edge strip. A luggage case is produced by such a method of manufacture.

3,579,805

METHOD OF FORMING INTERFERENCE FITS BY HEAT TREATMENT

Howard Berdolt Kast, Fairfield, Ohio, assignor to General Electric Company

Filed July 5, 1968, Ser. No. 742,882
Int. Cl. B23p *11/02*
U.S. Cl. 29—447 10 Claims



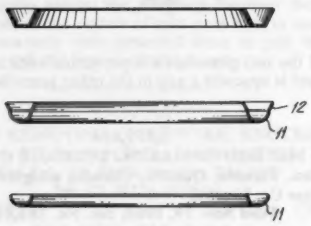
An interference fit can be provided between metal components where at least one of the components is formed of a precipitation-hardenable metal alloy which undergoes a substantially permanent dimensional change in addition to a reversible dimensional change upon heat treatment at elevated temperatures. The interference fit itself will be irreversible if both components are formed of the preciptitation-hardenable alloy and reversible if only one of the components is formed of the alloy.

3,579,806

METHOD OF PRODUCING TOROIDAL BODIES FROM HARD, BRITTLE STEELS

Gerard Huberdeau, Atelier de Construction de Tarbes, France, assignor to French State represented by the Minister of Armed Forces Ministerial Delegation of Weapons, Technical Delegation of Land Weapons Manufacturing Workshops of Tarbes, Paris, France

Filed June 19, 1969, Ser. No. 834,632
Claims priority, application France, June 19, 1968, 155,597
Int. Cl. B21d *39/02*
U.S. Cl. 29—463 10 Claims



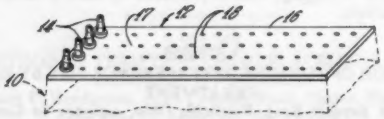
A toroidal body of hard, brittle material is produced by joining two semicircular toroidal bodies in face-to-face relation, each semicircular toroidal body being formed from a ring of material by first spin forming the ring in two steps to produce a U-shape peripheral portion on the ring, thereafter machining the peripheral portion to provide uniform thickness and then heat treating the body and hot stamping the same to form semicircular portions on said peripheral portions which are separated from the remainder of the body by machining.

3,579,807

METHOD AND APPARATUS FOR PRODUCING A STREAM FEEDER

Leonard A. Matulewicz, 931 Continental Blvd., Toledo, Ohio

Filed May 29, 1968, Ser. No. 733,040
Int. Cl. B23k *31/02*
U.S. Cl. 29—471.3 9 Claims



Apparatus and method for forming a feeder for flowing streams of filament-forming material such as molten glass by deforming tubular members into contoured longitudinal members and subsequently securing the longitudinal members to a plate with orifice openings in alignment with such openings.

3,579,808

TANTALUM CLAD NIOBIUM

Melvin A. Hagan, Palos Verdes Peninsula, and Roy I. Batista, Palos Verdes Estates, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Mar. 20, 1969, Ser. No. 809,039
Int. Cl. B235 *31/02*
U.S. Cl. 29—497.5 1 Claim

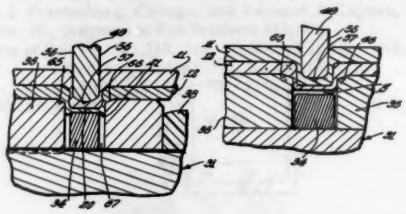
This invention relates to composite metal article and method for making the same wherein tantalum metal is applied to the surface of niobium metal and the two metals are diffusion bonded in a protective environment. The bonded metals may be cold worked to produce the final fabricated article.

3,579,809

METHOD OF JOINING SHEETS OF RIGID DEFORMABLE MATERIAL

Cecil R. Wolf, Rock Falls, and John P. Holland, Sterling, both of, Ill., assignors to Frantz Manufacturing Company, Sterling, Ill.

Filed Dec. 13, 1968, Ser. No. 792,194
Int. Cl. B21d *39/00*; B23p *11/00*
U.S. Cl. 29—509 13 Claims



A method of securing together, as by staking, superimposed strips or sheets of rigid yet deformable material, such as mild steel, having generally planar surfaces. The method includes positioning the superimposed sheets between a driven punch and the working face of a stationary anvil upon sheet-supporting members resiliently urged toward each other mounted laterally of said anvil and providing with said punch and anvil a forming space extending directly as well as laterally above, and laterally below, the anvil working face. By a single stroke of said punch, the punch causes a flow of the material of the strips into the forming space to form therein telescoped hollow bosses, or rivets, with a lower wall portion of the inner boss expanded laterally into interlocking engagement with the corresponding laterally confined wall portion of the outer boss and with the material of the lower transverse end of the outer boss yieldably restrained by said resiliently urged members to a predetermined degree of lateral expansion yet free to flow into the portion of the forming space laterally below said anvil working face to provide downwardly extending lateral flanges.

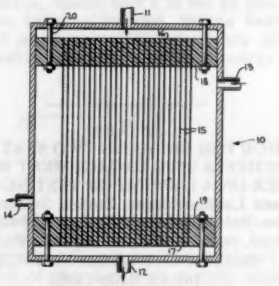
The punch is preferably formed with a pair of opposed lower downwardly converging surfaces and with an intermediate pair of parallel surfaces which together define a generally rectangular striking end, the face of which is arcuate. With this configuration, the striking end of the punch forms hollow bosses that interlock in one plane including the common axis of the bosses, but that are noninterlocking in a plane normal to the first and also including the common axis.

3,579,810

METHOD OF MAKING CAPILLARY ASSEMBLIES FOR OXYGENATORS AND THE LIKE

George Mon, Silver Spring, Md., assignor to the United States of America as represented by the Secretary of the Army

Filed June 13, 1969, Ser. No. 833,056
Int. Cl. B23p *17/00*, *25/00*
U.S. Cl. 29—527.1 8 Claims



An inexpensive and rapid method of assembling capillary units and the like is disclosed. Commercially available capil-

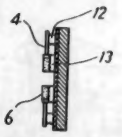
lary tubing is first wound around two end pins spaced apart a predetermined distance slightly greater than the length of the capillary strands in the completed unit. Each end pin is then dipped into an epoxy potting compound and caused to harden. The hardened ends are thereafter cut in appropriate places so as to expose the capillary tubes. A suitable outer housing, having appropriate conduits for the transfer of blood and oxygen to the unit, may then be provided to the assembled capillaries.

3,579,811

METHOD OF MAKING PASSIVE ELECTRONIC COMPONENTS INCLUDING LAMINATING TERMINALS TO SUBSTATE

Masao Matsuo, Takarazuka-shi, and Hiroshi Tomiwa, Osaka, Japan, assignors to Matsuo Electric Company, Limited, Toyonaka-shi, Osaku-fu, Japan

Filed Dec. 11, 1969, Ser. No. 884,226
Claims priority, application Japan, Dec. 21, 1968, 43/93890
Int. Cl. H01g *13/00*
U.S. Cl. 29—570 **3 Claims**



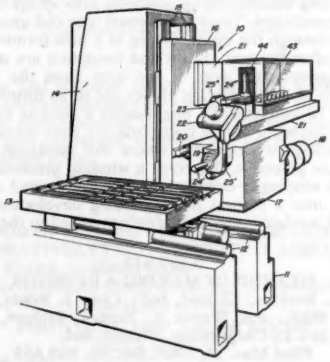
A method of making a chip-shaped electronic component by forming a laminated structure consisting of a metal plate and a substrate adhesively secured to one side thereof. Etching the metal plate to form a plurality of raised terminals and then forming a plurality of elongated conductive members having electronic elements formed on the outer ends thereof, which elements are then electrically and mechanically secured to selected terminals while adjoining portions of said conductive members are secured to other terminals of each set. Enclosing the formed structure within a molded resin and then stripping the substrate to expose one surface of the sets of terminals. Thereafter the structure is cut to separate the components one from the others. An improved electronic component is provided having the terminals on one face thereof which thereby facilitates attachment to a printed circuit board or other electronic circuit structure.

3,579,812

MACHINE TOOL

Stanley A. Pfister, Wilmington, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Sept. 20, 1968, Ser. No. 761,235
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 **4 Claims**



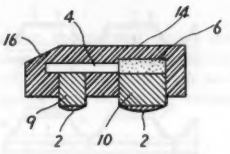
This invention relates to a machine tool and, more particularly, to apparatus for performing a machining operation, which apparatus is provided with a multiple-tool storage rack and means for moving selected tools from that rack into position on a rotatable spindle. The rack is provided with a plurality of identical sockets to carry the tools from the rack to an interchange position and return them to the rack.

3,579,813

METHOD OF MAKING ELECTRONIC COMPONENTS ON COMBLIKE METAL FINGERS AND SEVERING THE FINGERS

Hiroshi Tomiwa, Osaka, Japan, assignor to Matsuo Electric Company, Limited, Toyonaka-shi, Osaka-fu, Japan

Filed Dec. 11, 1969, Ser. No. 884,257
Claims priority, application Japan, Dec. 23, 1968, 43/94395
Int. Cl. H01g *13/00*
U.S. Cl. 29—570 **3 Claims**



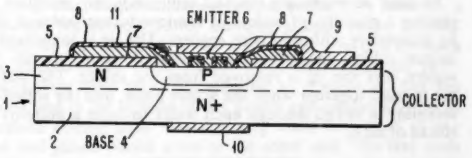
A method of making a chip-shaped electronic component by etching a metal plate to form a plurality of raised terminals, forming a comblike metal plate having electronic elements formed on the outer ends of the projections and then electrically and mechanically securing the electronic elements to the terminals and then separating the individual chip-shaped components to form a resultant structure having downwardly extending terminals which may be readily soldered or otherwise attached to a printed circuit board or other electronic circuit structure.

3,579,814

METHOD FOR FABRICATING A SEMICONDUCTOR DEVICE HAVING AN EPITAXIALLY GROWN REGION

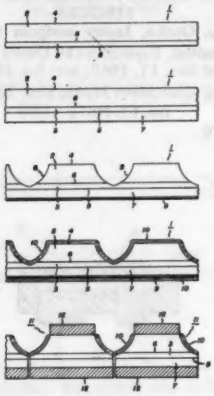
Frederick H. Dill, Jr., Putnam Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 446,780, Mar. 31, 1965, Pat. No. 3,398,335, Filed Mar. 18, 1968, Ser. No. 734,185
Int. Cl. B01j *17/00*; H01l *5/00*
U.S. Cl. 29—578 **9 Claims**



Disclosed is a method of making minute semiconductor devices wherein superposed apertured insulating, metal contact and insulating layers are applied to the semiconductor base layer and semiconductor material is provided within the aperture but spaced from the metal contact layer by the second insulating layer.

3,579,815
PROCESS FOR WAFLR FABRICATION OF HIGH BLOCKING VOLTAGE SILICON ELEMENTS
Finis E. Gentry, Skaneateles, N.Y., assignor to General Electric Company
Filed Aug. 20, 1969, Ser. No. 851,596
Int. Cl. B01j *17/00;* **H01l** *5/00*
U.S. Cl. 29—580 **17 Claims**



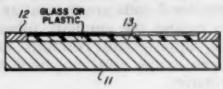
A silicon wafer provided with at least one voltage-blocking junction is strengthened by epitaxially depositing silicon onto one major surface. The wafer is then etched to form grooved surfaces intersecting the junction. A passivation layer is deposited and fast diffusing impurities are gettered and removed. The wafer is broken into a plurality of discrete, separately useable silicon elements.

3,579,816
METHOD OF PRODUCING SEMICONDUCTOR DEVICES
Robert C. Ingraham, Topsfield, and Hubert J. Ramsey, Burlington, Mass., assignors to Sylvania Electric Products Inc.
Filed Dec. 23, 1968, Ser. No. 786,208
Int. Cl. H01l *7/00;* **B01j** *17/00*
U.S. Cl. 29—583 **8 Claims**

Method of producing stacked semiconductor rectifiers by placing a plurality of wafers of semiconductor material in a jig alternately with thin wire spacers. The jig is immersed in molten solder, the spacers are removed from between the wafers, and the jig is removed from the solder. The wafers are pressed together while the solder cools, and the solidified assembly is sawed through each wafer to form a plurality of stacks of dice.

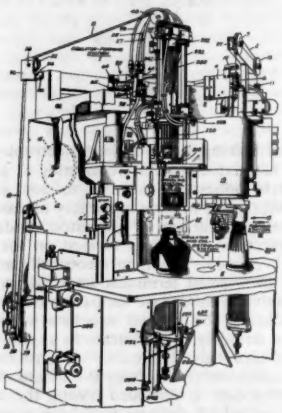
3,579,817
COVER FOR COPLANAR WALLS OF AN OPEN TOP CIRCUIT PACKAGE
Martin A. Boyle, Woodcliff Lake, N.J., assignor to Alpha Metals, Inc., Jersey City, N.J.
Filed May 21, 1969, Ser. No. 826,600
Int. Cl. H01l *1/02*
U.S. Cl. 29—588 **11 Claims**

A cover for hermetically sealing the open end of a circuit package in which a solder border is applied to the marginal areas of the cover, and a dielectric dress is applied within the border; the dielectric dress is sufficiently thick to fit into the



open end of a circuit package and to position the lid in exact registration with the circuit package.

3,579,818
METHOD AND APPARATUS FOR FORMING SHAPED INSULATORS AND FOR DEVELOPING COILS OF A MAGNETIC CORE
Richard B. Arnold, and Dallas F. Smith, Fort Wayne, Ind., assignors to General Electric Company
Filed Mar. 11, 1969, Ser. No. 806,057
Int. Cl. H02k *15/00*
U.S. Cl. 29—596 **20 Claims**

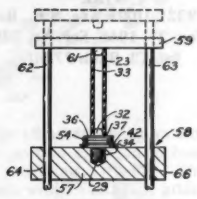


Method and apparatus for developing shaped insulators of different axial lengths and coil turns into coil groups in preselected slots of a magnetic core. The insulators are automatically formed into the desired lengths from a continuous strip of insulative material at an insulator-forming station by apparatus including a feeding mechanism, slotted magazine, cutter, and linkage having a movable pivot operative to effect a change in the length of material advanced into predetermined slots of the magazine. The magazine is mounted to telescope with an outer surface of an insulator and turn-accommodating mechanism or assembly into which the insulators are transferred. Turns are formed into coil groups in the assembly through the outer surface at a turn-forming station, and thereafter the coil groups and insulators are distributed into the preselected slots of the core from the assembly. Where two or more winding phases are to be distributed, the core may be conveniently mounted in a holding device carried by a conveyor which transports the core through a first phase-winding development, where the insulators and one winding are placed in the core, a winding pressback station where the winding is transformed into the desired configuration, and into a second phase-winding development where additional insulators and a winding are added to the core.

3,579,819
METHOD OF MAKING A RESISTOR
Arthur L. Rozema, Elkhart, Ind.; Lynn J. Brady, Edwardsburg, Mich., and Wayne A. Barden, Elkhart, Ind., assignors to CTS Corporation, Elkhart, Ind.
Filed Mar. 24, 1969, Ser. No. 809,655
Int. Cl. H01c *17/00*
U.S. Cl. 29—610 **6 Claims**

High-voltage circuit arrangement includes a load connected to a power supply of at least 20,000 volts, and a single

discrete high-voltage electrical resistor connected to the power supply and load. The high-voltage resistor comprises a spiral resistive path supported on a ceramic substrate which provides a uniform and continuous heat dissipation path between the ends of the resistor. A heat-dissipating mounting member forms an electrical termination for the resistor, rapidly transfers heat away from the substrate, and includes a substrate alignment surface and seat in close proximity to a surface of the substrate. A threaded portion of the heat-dissipating member is useful for mounting the resistor on a supporting surface and insulative means including an insulative jacket surrounds the substrate. High-voltage corona-inhibiting means include an insulative body that extends one-half



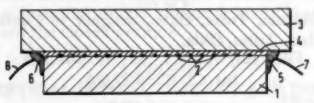
inch beyond an end of the resistive path and embeds a lead wire connected to the resistive path. The resistive path is a cermet-film-type material having a resistivity of 5 megohms per square, a voltage coefficient of less than 400 parts per million per volt per square, and a voltage withstanding ability of 3,000 volts per inch of resistive path. The resistive path itself comprises an intersticed mass of inert particles and a conductive phase forming an interstitial mass within the intersticed mass. The method includes the steps of positioning the mounting member and substrate at a work station, compressively centering the substrate on the mounting member with a movable platen, controlling the transfer of heat relative to the mounting member, and soldering the mounting member to the substrate.

3,579,820

METHOD OF MAKING GALVANOMAGNETIC RESISTOR UTILIZING GRID FOR SHORT-CIRCUITING HALL VOLTAGE

Paul Hini, Erlangen, Germany, assignor to Aktiengesellschaft Siemens, Berlin, Germany

Division of Ser. No. 665,928, Setp. 6, 1967, Pat. No. 3,490,070.
Filed June 24, 1969, Ser. No. 862,547
Int. Cl. H01c *17/00*
U.S. Cl. 29—610 **7 Claims**



A metal grid is placed on the surface of a semiconductor layer for short-circuiting Hall voltage in the semiconductor layer. The semiconductor layer is placed on a carrier plate with the grid interposed between the semiconductor layer and the carrier plate.

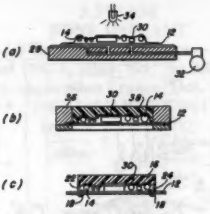
3,579,821

METHOD OF MAKING CONFORMAL BLOCKS FOR EVAPORATIVELY COOLING CIRCUIT ASSEMBLIES

Albert G. Kurisu, Anaheim, Calif.
Assignor to the United States of America as represented by the Secretary of Navy.

Filed Aug. 21, 1969, Ser. No. 851,866
Int. Cl. H05k *3/28*
U.S. Cl. 29—627 **2 Claims**

A conformal block for evaporatively cooled modular electronic packages is disclosed. The conformal block provides a predetermined convective path for a coolant and controls the mixture ratio of the two-phase (liquid and vapor) flow to provide an optimized vapor/liquid mixture at the outlet port. This result is achieved by confining the components within a vertical flow duct and sizing the liquid inlet passage at the bottom of the block as a function of the heat load. The outlet



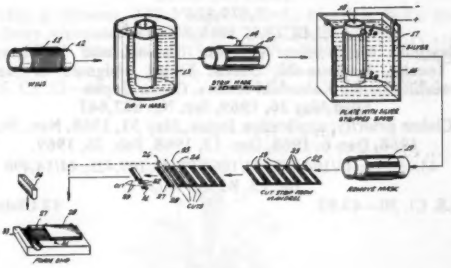
port is located above the normal liquid level to prevent further liquid entrainment. The fixed location of the outlet provides a relatively consistent flow path to the condenser under adverse inclination angles in respect to gravity direction.

3,579,822

METHOD AND BLANK FOR MAKING POTENTIOMETER CONTACT SPRINGS

Frank L. Dieterich, 3727 S. Robertson Blvd., Culver City, Calif.

Filed May 13, 1968, Ser. No. 728,683
Int. Cl. H01r *9/00*
U.S. Cl. 29—630 **4 Claims**

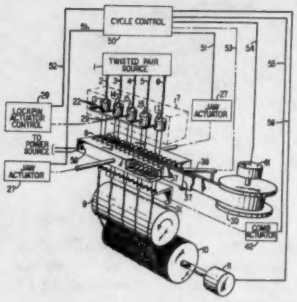


A method of manufacturing miniature potentiometer contact springs by winding a substantial length coil of a single layer of fine, heat-treatable precious metal alloy wire on a generally cylindrical form, masking spaced strips longitudinally of the wire coil, silver plating the wire coil between the masked strips, removing the strips and cutting the strip-plated wire band from the mandrel as a sheet, cutting the wire sheet in the middle of the plated and unplated strips to produce control strip blanks having short free wires at one end and joined plated wires at the other end. The free ends of the wires in the blank are then formed into radiused points of contact, and the blank heat-treated to develop hardness, wear resistance and spring characteristics in the wire fingers. This blank may itself form an article of commerce with the customer (or the original manufacturer) slicing the strip blank into the desired contact widths, forming the plating bonded portion, if desired, and attaching it to a support. The wire may be wound on a solid mandrel and the coil plated only on its outer surface or on a slotted mandrel and the coil plated on both inside and outside surfaces at the slots.

3,579,823
APPARATUS AND METHOD FOR APPLYING INDEXING STRIPS TO CABLE PAIR GROUPS

Tillman J. Gressitt, Lutherville, Md., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 12, 1969, Ser. No. 857,503
Int. Cl. H01r 6/00
U.S. Cl. 29—630 10 Claims

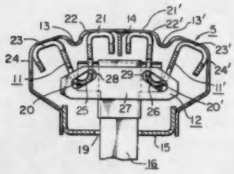


This application describes apparatus for placing thin complaint strips at intervals crosswise over a group of advancing twisted wire pairs. The two wires of each pair thread through separate threadways in a lockable rotor. As the twisted pairs advance in unison, the respective rotors turn at rates differing with the various pair twist lengths. The rotors are locked at different times, but each in a position that conforms all threadways in a single plane. The strips are then applied downstream of the rotors, where by then the wires lie flat. Thereafter, the rotors are unlocked.

3,579,824
ELECTRIC DRY SHAVER

Masamiki Matsumoto; Motohisa Nishino, and Yoshimasa Tanaka, Kadoma-shi, Osaka, Japan, assignors to Matsushita Denko Kabushiki Kaisha, Osaka, Japan

Filed May 26, 1969, Ser. No. 827,847
Claims priority, application Japan, May 31, 1968, Nov. 30, 1968, Dec. 6, 1968, Dec. 13, 1968, Feb. 26, 1969, 43/45,514; 43/104,450; 43/106,847; 43/109,426; 44/14,496
Int. Cl. B26b 19/02
U.S. Cl. 30—43.92 12 Claims

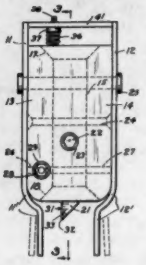


An electric dry shaver having a shaving blade part, which comprises an outer cutter blade provided with side cutting surfaces respectively continuous to its upper cutting surface, at least a pair of inner cutter blades reciprocally driven inside and relative to the outer cutter blade in its longitudinal direction and provided respectively with a side blade part to oppose to one of the side cutting surfaces of outer cutter blade and with an upper blade part to be opposed to a part of the upper cutting surface of outer cutter blade adjacent said side cutting surface, and a biasing means to urge the inner cutter blades to resiliently engage inner surfaces of the outer cutter blade. Said biasing means is provided with a means to distribute its biasing force uniformly to each of the inner cutter blades and, specifically to those inner blades having the side blade part, in a diagonal direction with respect to axial line of the biasing means toward respective corner edges between the upper cutting surface and side cutting surfaces of outer cutter blade, so that such inner cutter blades are always pressed against the upper and side surfaces of outer blade simultaneously.

3,579,825
ELECTRICIAN'S TOOL FOR LONGITUDINALLY AND CIRCUMFERENTIALLY CUTTING INSULATION ON WIRE

Alfred H. Powell, 19321 108th Ave. N.E., Bothell, Wash.

Filed Nov. 27, 1968, Ser. No. 779,557
Int. Cl. B26b 27/00
U.S. Cl. 30—90.7 3 Claims

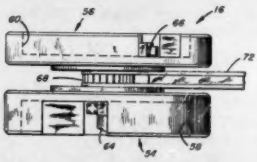


This tool has a blade carrying assembly supporting a blade so it can be adjusted for depth of cut and can be set in one position to slit insulation lengthwise on a wire and in another position to cut the insulation around the wire. The blade has graduation marks on it so the depth of cut it is set to make can be read directly. Two wire-guiding members at opposite sides of the blade and the blade-carrying assembly are adjustable toward and away from each other to receive and hold wires of different sizes.

3,579,826
TOOL FOR SIMULTANEOUSLY BEVELING MATING PIPES

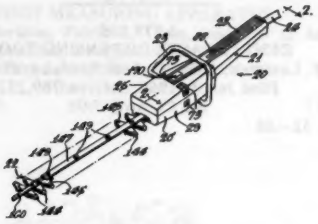
Eldon W. Morain, Tulsa, Okla., assignor to Continental Industries, Inc., Tulsa, Okla.

Filed July 9, 1969, Ser. No. 840,201
Int. Cl. B23d 21/06
U.S. Cl. 30—93 1 Claim



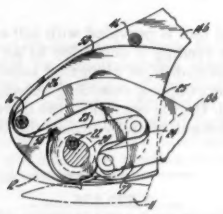
This invention relates to a method for permanently joining the ends of two lengths of plastic pipe and includes a beveling tool and heating tool for use in preparing the pipes for the joining.

3,579,827
HEDGE TRIMMER
Robert D. Grahn, Hinsdale, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Aug. 1, 1966, Ser. No. 569,490
Int. Cl. B25f *3/00*
U.S. Cl. 30—144 4 Claims



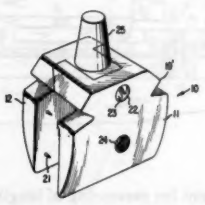
An electric hedge trimmer having an elongated split housing with the front portion enlarged to house the motor and the rear portion providing a handle. The motor drives a toothed cutter blade with a saw blade attached to the end. A transversely disposed loop-shaped handle is provided and a level guage is secured on top of the housing.

3,579,828
HEAVY-DUTY METAL SNIPS
Andrew M. Hexdall, c/o A. M. Hexdall Company, Morris, Ill.
Filed June 30, 1969, Ser. No. 837,623
Int. Cl. B26b *13/00*
U.S. Cl. 30—251 15 Claims



A pair of heavy-duty metal snips is disclosed in which the operative blade is moved by an eccentric pin coupled to the operative handle by a crank arm and link. The other blade is rigid with a flat mounting plate and the link is designed to nest within cooperative portions of the handle. The crank arm, link and eccentric are arranged so that the mechanical advantage transferred to the operative blade increases as it moves toward the closed position.

3,579,829
PERICORTICAL DENTAL IMPLANT AND INSERTER THEREFOR
Arnold Sampson, Pittsburgh, Pa., assignor to The Sampson Corporation, Pittsburgh, Pa.
Filed Jan. 22, 1970, Ser. No. 4,904
Int. Cl. A61c *13/00*
U.S. Cl. 32—10 13 Claims

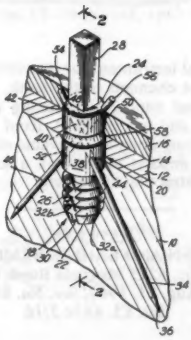


A pericortical implant for the retention of various dental prosthetic replacements in the form of a two-part clamp adapted to be placed about either the mandible or maxilla of the patient and having a mounting post for reception of the dental prosthesis. An inserter device including a force-applying screw for moving one clamp half with respect to the other and having extendible arms for temporarily retaining the clamp halves in position is provided for rapid application of the clamp.

3,579,830
BONE IMPLANT
Joseph Morel, 14 Villers Bocage, France
Filed Oct. 1, 1969, Ser. No. 862,728
Claims priority, application France, Oct. 1, 1968, Sept. 19, 1969, 168337; 69-31944
Int. Cl. A61c *13/00*
U.S. Cl. 32—10 7 Claims

A bone prothesis implant as disclosed is formed by a metal rod which terminates in a screw in the form of a gimlet of conical pitch with rounded edges. This screw, intended to be introduced into the bone, is characterized in that each of its threads, except that of the point, appears in elevation as a truncated cone, of which the bases are inclined relatively to the axis of the screw. The end of the screw preferably ends in a point, so as to be able easily to penetrate into the bone.

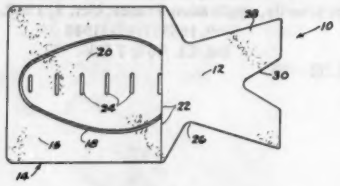
3,579,831
BONE IMPLANT
Irving J. Stevens, 130 Margaret Blvd., Merrick, N.Y., and Jerry Alexander, 64 Hedgerow Lane, Jericho, N.Y.
Filed Mar. 5, 1969, Ser. No. 804,625
Int. Cl. A61c *13/00*
U.S. Cl. 32—10 9 Claims



A bone implant such as a dental implant to be received in a jaw bone. The bone implant includes a screw which has a pair of opposed end regions, one of which is threaded for the purpose of screwing into bone and the other of which is provided with a means for fastening any other desired structure to the screw. For example, in the case of a dental implant this fastening means can be used to fasten a crown to the screw. In addition to the screw the bone implant of the invention includes at least one stabilizing pin operatively connected with

the screw to stabilize the latter in the bone, so that as a result of the stabilizing, the screw will be reliably retained in the bone.

3,579,832
ANATOMY RELATING DEVICE FOR DENTISTS
Hugh Cooper, Jr., 425 E. Washington St., Ann Arbor, Mich.
Filed Oct. 2, 1969, Ser. No. 863,288
Int. Cl. A61c *9/00*
U.S. Cl. 32—17 **10 Claims**



A flat sheet of expanded polystyrene is creased to provide a hinge between an insert to be placed between a patient's maxillary and mandibular teeth and a two-part flap, the outer part being swung upwardly before the patient's face so that his interpupillary line and midsagital plane can be marked thereon. With the sheet flattened, the midsagital plane location is also marked on the inner flap. The insert takes a permanent impression of the patient's cusps when the patient bites thereon. When the insert is transferred to a laboratory model, the flaps are turned upwardly to facilitate transferring the information marked thereon directly to the model.

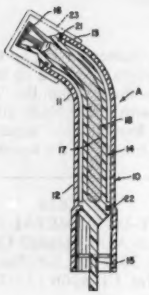
3,579,833
ODONTOLOGICAL INSTRUMENT
Americo Colombo, and Ugo Ronchetti, via dei Partigiani 12, Como, Italy
Filed Jan. 2, 1969, Ser. No. 788,389
Claims priority, application Italy, Jan. 19, 1968, 3802-A/68
Int. Cl. A61c *1/10*
U.S. Cl. 32—27 **1 Claim**

An odontological instrument for introduction into and hollowing out the root channels of the teeth, comprising an angled-off longitudinal handle terminating in a head accommodating a worm and worm wheel, fixed and movable cam means, a spring acting upon the movable cam, and a tool carrying shaft which imparts to the tool a screwing movement and a rapid axial retracting movement.

3,579,834
CROWN AND BRIDGE REMOVER
Charles C. Reed, Jr., 4225 Mayfield Road, Cleveland, Ohio
Filed Aug. 21, 1969, Ser. No. 851,801
Int. Cl. A61c *3/16*
U.S. Cl. 32—43 **10 Claims**

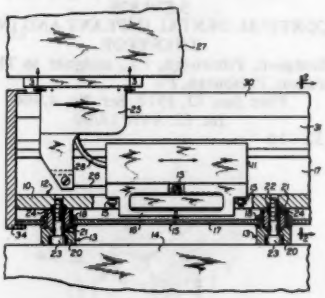
A crown and bridge remover comprises an arch bar, a pair of stabilizers and two pronged crown lifters. The lifter prongs are adapted to fit under the crown. The arch bar is substantially the shape of an average row of teeth and is bendable to fit the mouth of an individual patient. The stabilizers are mounted on the arch bar so that they may be on either side of the crown or bridge to be pulled. The lifter is mounted on the arch bar between the stabilizers and provided with threaded means to draw the prongs toward the arch bar and thus remove the crown.

3,579,835
DENTAL PASTE DISPENSING TOOL
Myron F. Levenson, 5596 Mayfield Road, Lyndhurst, Ohio
Filed Jan. 6, 1969, Ser. No. 789,252
Int. Cl. A61c *3/06*
U.S. Cl. 32—58 **10 Claims**



A rotary dental tool is provided with self-contained means for automatically feeding a dentifrice to an applicator. The dentifrice is contained in an elongated tubular element that serves as a flexible coupling extending between a rotary drive and the tool head. During operation, the drive causes twisting of the tubular element, thereby urging the dentifrice toward the applicator.

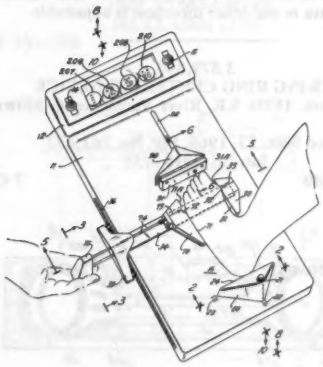
3,579,836
ARRANGEMENT FOR MEASURING OF LENGTHS
Heinz Kraus, and Siegbert Holstein, Traunreut, Germany, assignors to Dr. Johannes Heidenhain, Traunstein, Germany
Filed May 8, 1969, Ser. No. 822,935
Claims priority, application Germany, May 10, 1968 P 17 73 403.1
Int. Cl. G01b *11/02*; B23q *17/02*
U.S. Cl. 33—1R **22 Claims**



An arrangement for measuring of lengths, which comprises a measuring system including a measuring rod and a sensing device. The measuring system is enclosed for protection against disturbing outer influences. A covering shaft has a U-

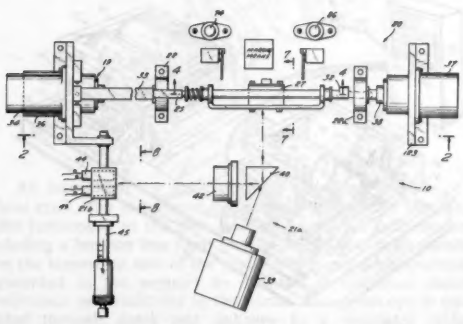
profile and receives the sensing device. Resilient sealing lips of bendable material engage the leg portions of the covering shaft over its entire length and covers as a roof member the covering shaft. A driver projects through the sealing lips and has a cross section of a sword favoring the adherence of the sealing lips.

3,579,837
FOOT MEASURING APPARATUS
Charles A. Soriano, Fairfield, Conn., assignor to Atwater-Forbes Corporation, Westport, Conn.
Filed June 12, 1969, Ser. No. 832,570
Int. Cl. A43d *1/00*
U.S. Cl. 33—3 7 Claims



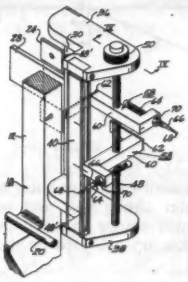
A portable, battery-operated human foot-measuring apparatus is provided for simultaneously measuring the arch length and related width length of the foot as well as the heel-toe length. The apparatus operates in such a manner that one can measure either right or left foot within a single four sided measuring zone without mechanical rotation or change of scales and electronic readout means are provided for indicating all measurements.

3,579,838
METHOD OF THERMOMETER POINTING AND APPARATUS THEREFOR
Waldemar A. Ayres, Rutherford, N.J., assignor to Becton, Dickinson and Company, Rutherford, N.J.
Continuation-in-part of application Ser. No. 612,692, Jan. 30, 1967, now abandoned. This application Apr. 5, 1968, Ser. No. 719,214
Int. Cl. B43l *13/24*
U.S. Cl. 33—19 10 Claims



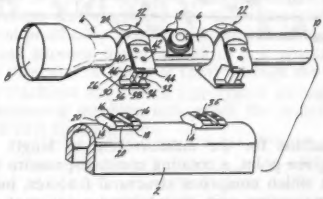
A thermometer-pointing apparatus which automatically performs the required facing operation and horizontal scanning to sense and accurately locate the top of a mercury column for purposes of pointing. For such purposes a photoelectric control system is connected with electromechanical means for manipulating the thermometer automatically as the top of the mercury column is being located and an improved optical system is provided for projecting a magnified image of the mercury column onto the photoelectric control system which is responsive thereto, thereby facilitating the pointing of the thermometer.

3,579,839
ARCHERY BOW SIGHT
Robert J. Kowalski, 512 Berner St., Pittsburgh, Pa.
Filed Nov. 5, 1968, Ser. No. 773,525
Int. Cl. F41g *1/00*; F41b *5/00*
U.S. Cl. 33—46 4 Claims



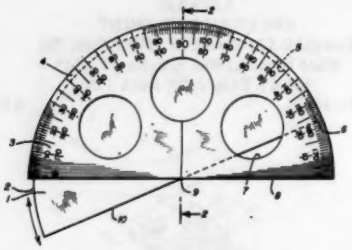
Described is an archery bow sight in which a sighting element is held in position on a bracket at a location for an approximate range, and incorporating vernier adjustment means on the bracket whereby fine adjustments in range can be made after the sighting element is positioned at its approximate range position on the bracket.

3,579,840
SNAP OFF TELESCOPE MOUNT
Joseph A. Heinzel, El Paso, Tex., assignor to Olin Corporation
Filed Sept. 4, 1969, Ser. No. 855,131
Int. Cl. F41g *1/38*, *1/42*
U.S. Cl. 33—50 11 Claims



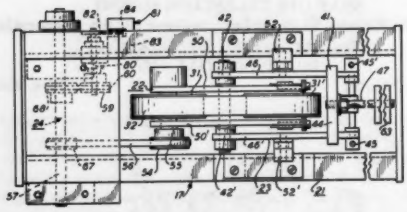
A mount for securing a telescope sight to a firearm, which mount is snapped on and off of the firearm without the need of special tools. The mount includes a base portion which is secured to the firearm, and a ring portion which is secured to the scope. A tongue and groove connection positions the ring portion longitudinally with respect to the base portion and prevents longitudinal movement from occuring between the scope and the firearm such as would be initiated by recoil when the firearm is fired. A spring clamp is arranged to position the ring portion laterally with respect to the base portion to resist lateral movement of the scope.

3,579,841
PROTRACTOR
Dana Peterson, P.O. Box 412, Coronado, Calif.
Continuation of application Ser. No. 752,695, Aug. 14, 1968, now abandoned. This application Feb. 2, 1970, Ser. No. 4,435
Int. Cl. B43l *13/00*
U.S. Cl. 33—75 **2 Claims**



A compact protractor having an outer transparent semicircularly shaped outer casing part and an opaque similarly shaped inner member snugly received therein for rotation. Openings and indicia are provided on the transparent outer casing.

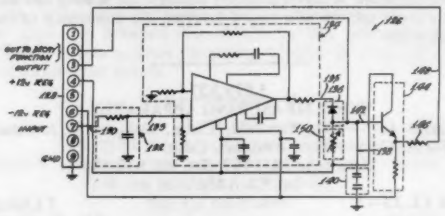
3,579,842
CABLE-MEASURING MACHINE
Joseph William Scher, Short Hills, N.J., assignor to Weber & Scher Mfg. Co., Inc., Newark, N.J.
Filed Sept. 27, 1968, Ser. No. 763,324
Int. Cl. G01b *3/12*
U.S. Cl. 33—133 **11 Claims**



In a machine for the measurement of length of cable passing a given point, a rotating constant-pressure belt measuring unit which comprises structural features, including a rotatable measuring unit, maintaining a constant and continuing contact with the cable to accurately measure same without interfering with the movement of the cable through the machine.

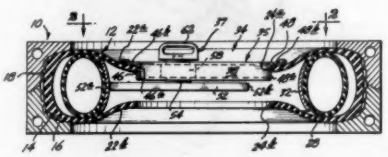
3,579,843
GAGE WITH VARIABLE RESPONSE AMPLIFIER
Edward Peonski, West Dundee, Ill., assignor to American Gage & Machinery Company, Elgin, Ill.
Filed Apr. 8, 1969, Ser. No. 814,405
Int. Cl. G01b *5/00;* **G01r** *15/08*
U.S. Cl. 33—147 **8 Claims**

An improved gage in combination with an amplifier which will respond more rapidly to a change of signal in one direction than to a change of signal in the opposite direction



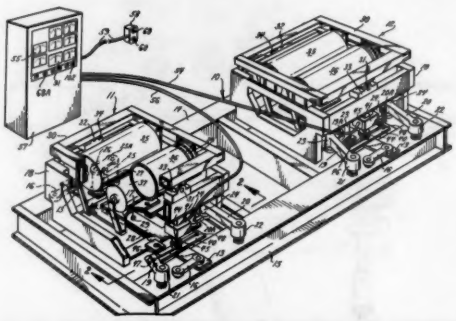
and where the ratio of the response rate in one direction to the response rate in the other direction is adjustable.

3,579,844
BACKING RING CENTERING DEVICE
Arne K. Olofson, 15396 S.E. River Forest Road, Milwaukee, Oreg.
Filed Sept. 23, 1968, Ser. No. 761,432
Int. Cl. G01b *3/38*
U.S. Cl. 33—180 **7 Claims**



A device for centering an annular backing ring within a tire casing, the device including an elongated guide supported against diametrically opposed regions of a bead on the casing and an indicator bar mounted for movement relative to the guide. The indicator bar may be moved into contact with diametrically opposite internal regions of the backing ring and cooperating graduations and marker on the guide and bar indicate the position of the bar, and thus the position of the backing ring, relative to the guide member.

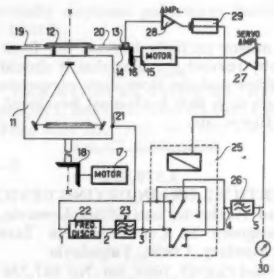
3,579,845
DYNAMIC WHEEL TOE AND TIRE PULL TESTING APPARATUS
Lee Hunter, St. Louis County; David A. Senften, Florissant, Mo., and Edwin W. Logan, Belleville, Ill., assignors to Hunter Engineering Company, Bridge, Mo.
Filed Mar. 27, 1969, Ser. No. 811,160
Int. Cl. G01b *19/28*
U.S. Cl. 33—203.13 **7 Claims**



Dynamic testing apparatus for vehicle wheels for determining the wheel toe relationship and for measuring the extent of

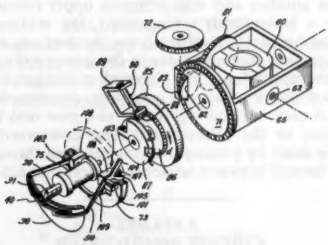
lateral pull or scuffing developed between the tire tread and the road surface. The apparatus includes adder-memory and subtractor-memory circuits responsive to wheel toe signals generated by a dynamic wheel driving apparatus which rotates the wheels in forward and reverse directions to obtain wheel toe measurements independent of the lateral pull developed by the tire characteristics on the rotating surfaces and to obtain an indication of the tire pull characteristics of the tire.

3,579,846
LASER GYROMETER SYSTEM
Jean-Michel Catherin, Savigny-Sur-Orge, France, assignor to Compagnie General D'Electricite, Paris, France
Filed Dec. 15, 1967, Ser. No. 690,814
Claims priority, application France, Dec. 15, 1966, June 5, 1967, 87563;109148
Int. Cl. G01c *21/00*
U.S. Cl. 33—204 **18 Claims**



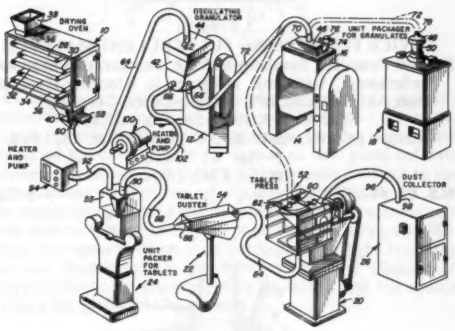
Variation of output frequency of a laser gyrometer, the plane of which rotates about a vertical axis, is utilized to ascertain the direction of geographical North. Adequate mechanical construction reduces several inaccuracies to a minimum.

3,579,847
ATTITUDE INDICATOR
John W. Winter, and Guy K. Harrison, Jr., Houston, Tex., assignors to Aviation Instrument Manufacturing Corporation
Filed May 29, 1968, Ser. No. 732,987
Int. Cl. G01c *19/44;* **G01d** *7/02, 5/02*
U.S. Cl. 33—204 **12 Claims**



An instrument for indicating roll and pitch attitude of a host craft. The instrument comprises a support for attaching the instrument to the host craft and a terrain reference including a horizon line fixed relative to the host craft parallel to the transverse axis of the craft. A gyroscope is universally mounted in the support to maintain a stabilized datum reference perpendicular to the earth. The gyroscope is coupled through gears and linkages to a simulator which represents the host craft as viewed from the rear. The simulator is mounted adjacent the terrain reference for angular movement with respect to the horizon line to indicate roll and for radial movement relative to the horizon line center to indicate pitch. In one embodiment the simulator is a three dimensional representation of the host craft pivotably connected to the coupling mechanism for pitch movement relative to the horizon line in the same sense the host craft pitches relative to the natural horizon. As the host craft rolls or pitches relative to the stabilized datum gyroscope the rotation and movement of the gear and linkage coupling devices effect the various responsive displacements of the simulator for attitude indication.

3,579,848
METHOD OF CONTROLLING HUMIDITY CONTAMINATION OF HYGROSCOPIC MATERIAL-HANDLING MACHINES
Tomas Hernandez, 9220 S.W. 38th St., Miami, Fla., and Valentin E. Lorenzo, 119 N.E. 20th St., Miami, Fla.
Division of Ser. No. 720,259, Apr. 10, 1968, Pat. No. 3,500,554.
Filed Jan. 19, 1970, Ser. No. 3,781
Int. Cl. F26b *5/04*
U.S. Cl. 34—15 **5 Claims**

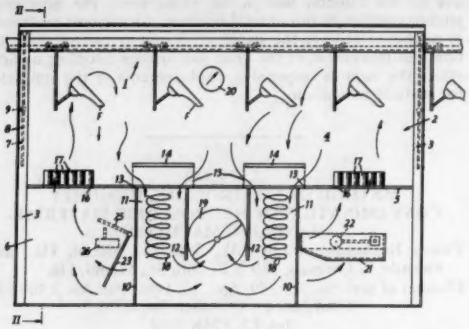


The method of reducing and substantially eliminating water contamination of hygroscopic materials of the type being processed by a series of enclosed material-processing machines and conveyed from each material-processing machine to the next machine through closed material conveyance passages extending between and continuously communicated with the enclosed material-processing machines. The method comprises the step of pumping heated air of low relative humidity under pressure into the enclosed area of the last material-processing machine to which the material is conveyed and allowing the heated air to flow upstream, relative to the direction of material flow, through the material-processing machines and closed conveyance passages to the material-processing machine into which the material to be processed is first discharged.

3,579,849
HEAT SETTING OF FOOTWEAR
Alfred Freeman, 94 Orlingburg Road, Isham, Northamptonshire, England
Filed Sept. 16, 1968, Ser. No. 762,234
Claims priority, application Great Britain, Sept. 21, 1967, 42909/67
Int. Cl. F26b *19/00*
U.S. Cl. 34—48 **6 Claims**

Heat-setting footwear by advancing same through closed chamber in which hot, moisture-saturated air is circulated. Moisture saturation maintained by hot air passing over shallow evaporation tank continuously supplied with water via a ball valve. Air-heating coils in chamber controlled by tem-

perature-responsive device adjacent footwear being treated so as to maintain temperature constant. Also discloses plurality of spaced unit-construction heat-setting chambers in conjunction with chain conveyor.

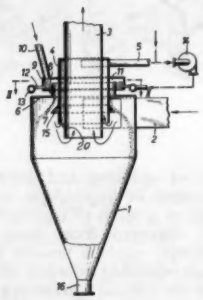


3,579,850

DEVICE FOR FEEDING PULVERULENT MATERIAL

Herbert Deussner, Bensberg-Refrath, and Jurgen Langmaack, Niederkassel, Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne-Deutz, Germany

Filed Mar. 3, 1969, Ser. No. 803,801
Claims priority, application Germany, Mar. 15, 1968, P 16 67 148.0
Int. Cl. F26b *17/10*
U.S. Cl. 34—57E **1 Claim**



A device for feeding pulverulent material into a cyclone for treatment therein by a gas. The pulverulent material is introduced into a ring-shaped chamber near the bottom of which a gas is tangentially injected by a number of nozzles which is mixed with the pulverulent material to form a uniform mist which through an annular overflow aperture at the top wall of the ring-shaped chamber overflows into an annular connecting slot which latter discharges the mixture of pulverulent material and gas downwardly into the upper portion of the treatment chamber in the cyclone.

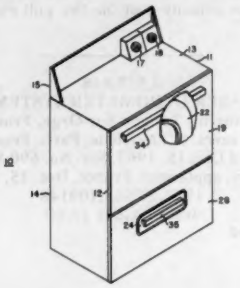
3,579,851

POP-OUT LINT TRAP AND DOOR INTERLOCK FOR LAUNDRY APPARATUS

Richard A. Elmy, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 19, 1969, Ser. No. 825,644
Int. Cl. F26b *21/06*
U.S. Cl. 34—82 **9 Claims**

A combination interlock and maintenance reminder for clothes dryer apparatus which prevents unintentional restarting of the dryer after interruption thereof, prior to the end of the cycle, and which reminds the operator to keep the lint trap clean. The invention is characterized by a lint filter located at the front of the dryer and operatively associated with the access door thereof such that when the latter is open the lint trap moves partially beyond the front wall of the dryer to thereby remind the user that it should be cleaned. Both the lint filter and the front door cooperate with circuit interrupt means such that both must be closed in order for the apparatus to operate.



3,579,852

VERTICAL GRAIN-DRYING DEVICE

Nikola Beograd Ivackovic, and Milija Urosevic, Cacak, Yugoslavia, assignors to Cer Preduzece Termo-Tehnickih Uredajaja I Montaza, Cacak, Yugoslavia

Filed Oct. 17, 1969, Ser. No. 867,236
Int. Cl. F26b *17/12*
U.S. Cl. 34—167 **9 Claims**

A grain-drying device is constituted by a plurality of horizontal layers which are vertically juxtaposed and respectively formed of inverted truncated pyramid sections adjacent one another and with common upper bounding edges to define a honeycomb arrangement, the sections of each layer being horizontally offset from the sections of the next lower layer such that apertures in the lower ends of the sections of the upper layer are disposed at the junctions of the sections of the lower layer whereby downwardly flowing material in each section will divide and pass into the adjoining sections in the lower layer. The downwardly flowing material is dried by passing a drying medium through broken channels formed between adjacent sections in each layer.

3,579,853

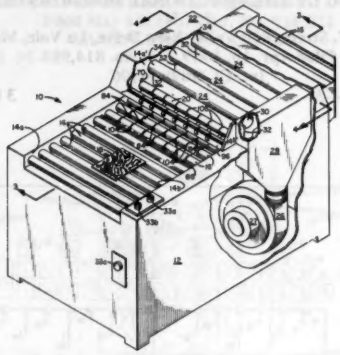
CIRCUIT BOARD DRIER

Joseph J. Martino, 7013 El Prauo Circle, Buena Park, Calif.

Filed Dec. 5, 1968, Ser. No. 781,566
Int. Cl. F26b *19/00*
U.S. Cl. 34—218 **11 Claims**

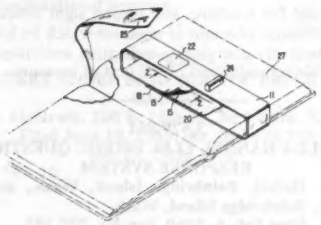
In an apparatus for drying circuit boards, two sets of rollers convey a circuit board past a set of air knives of novel configuration. Each air knife comprises a pair of planar blade members converging to form adjacent their apex an elongate orifice having a width on the order of 0.085 inches. A deflector lip projects from one edge of the orifice. Air forced through the orifice forms an air knife edge having an anemometer static pressure of greater than 10 inches of

water, providing exceptionally quiet, highly effective drying of the board. In some embodiments, a plurality of upper and



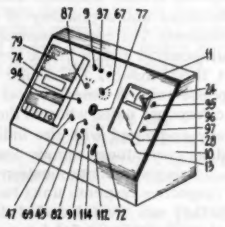
lower horizontally disposed guidewires facilitate drying of thin, flexible boards.

3,579,854
ISOLATION OF INFORMATION
John R. Tusson, R.I. Box 683, Belle Chasse, La.
Filed May 20, 1968, Ser. No. 730,334
Int. Cl. G09b *3/00*
U.S. Cl. 35—8 **17 Claims**



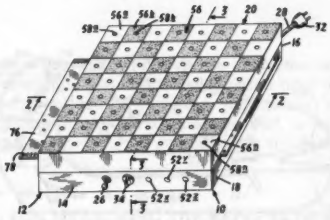
Graphic information contained in coordinated arrays is released a bit at a time by the use of an information isolating device. When an instruction mark on the device is located next to a bit of information in one array, a retrieval mark will be located next to a coordinated bit of information in another array. An endless belt or a metal clip at least in part transparent is placed about a leaf or collection of leaves containing graphic information and is moved to isolate the information.

3,579,855
TEACHING MACHINES
Maurice Reginald Worthy, and Clive Reginald Worthy, 398 Moreland Park, West Brunswick, Victoria, Australia
Filed May 17, 1968, Ser. No. 730,153
Claims priority, application Australia, May 17, 1967, 21891/67
Int. Cl. G09b *5/06*
U.S. Cl. 35—8 **8 Claims**



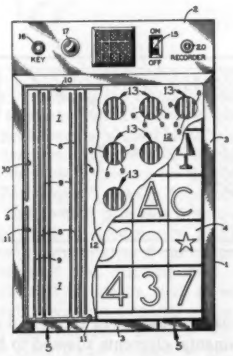
A teaching machine having means to display a plurality of items of visual information and to reproduce audio information. The visual information carrier is intermittently advanced to present new items. Means are provided to cause reproduction of the sound information during a portion of the dwell period of each visual item and to render the reproduction means ineffective while the visual information carrier is advancing to a new item.

3,579,856
AUTO-CHESS APPARATUS AND PUNCHED CARD THEREFOR
Frederick L. Way, 8 Hillcrest Lane, Woodbury, N.Y.
Filed July 22, 1968, Ser. No. 746,449
Int. Cl. G09b *19/22*; **A63f** *3/02*
U.S. Cl. 35—8 **8 Claims**



As described herein, a light source mounted in a housing illuminates each column of a prepunched chess card as the card is intermittently driven through the housing. Each column of the card, except for a start of new game column, includes at least two apertures which transmit the light to the light receiving ends of two of a possible 64 light fibers. The light transmitting ends of the fibers extend to the squares of a chess pattern formed in the top plate of the housing and illuminate the squares when their corresponding light receiving ends are illuminated by the light source. The illuminated squares indicate the chess piece to be moved and the square to which the piece is to be moved.

3,579,857
ELECTRIC TEACHING DEVICE
Jack L. Lamberson, Miami, Fla. (1200 Missouri St., Apt. 609, Baytown, Texas, 77520)
Filed Oct. 3, 1969, Ser. No. 863,430
Int. Cl. G09b *7/00*
U.S. Cl. 35—9 **7 Claims**



An electric device in which a selected teaching sheet is inserted and registered thereon. The sheet has printed thereon a number of different characters. A network of circuit closing conductors are positioned in the device under the sheet

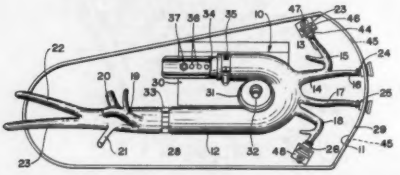
and covered by a resilient member having openings therein corresponding in position to each character. Each sheet has a conducting area on the opposite side of certain selected characters. The student is asked to press a finger directly on one of the selected characters. When correctly pressed, the circuit connected to the network will energize a lamp and buzzer.

3,579,858

ANATOMICAL MODEL

Itzhak E. Bentov, Belmont, Mass., assignor to Medi-Tech Incorporated, Belmont, Mass.

Filed Aug. 28, 1969, Ser. No. 853,849
Int. Cl. G09b *23/32*
U.S. Cl. 35—17 **10 Claims**



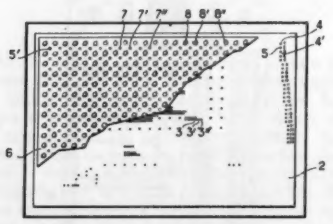
An anatomical model comprises a simulated main body blood vessel having a predetermined curvature at a portion thereof and is formed of a yieldable plastic material. At least one simulated secondary blood vessel is interconnected with the main body blood vessel at the curved portion. Means mount the model and comprise means for varying the positioning of the secondary blood vessel with respect to the main body blood vessel to correspond with variations caused by aging or abnormalities in naturally occurring blood vessels. Preferably the anatomical model simulates the aorta and attached arteries.

3,579,859

DESIGN GRID WITH VARIABLE GUIDE

Pierre Malenge, 19Rie Nationale, Raches, (Nord), France

Filed Jan. 29, 1969, Ser. No. 795,092
Claims priority, application France, Feb. 2, 1968, 138,577
Int. Cl. G09b *1/04*
U.S. Cl. 35—27 **10 Claims**



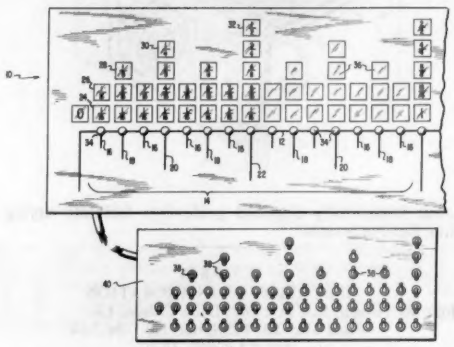
A game for making drawings or FIGS. and constituted by a plurality of ornamental elements adapted to be suitably positioned on a support, said game comprising at least one colored sheet or plate covered with a plurality of suitably located spots on the surface thereof, said sheet being associated to a grid provided with openings superimposed to said sheet and adapted to unveil through the openings thereof some of the spots of said colored sheet, which altogether form a design or drawing.

3,579,860

VISUAL AID FOR TEACHING AND TESTING THE SIGHT READING OF THE FRACTIONAL DIVISIONS OF AN INCH

Lawrence F. Strem, 810 Valley View Drive, La Vale, Md.

Filed Apr. 10, 1969, Ser. No. 814,998
Int. Cl. G09b *19/00*
U.S. Cl. 35—31 **3 Claims**



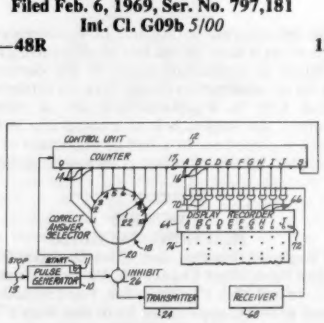
A visual aid for teaching and testing sight reading of the fractional divisions of a unit of measure which includes a plurality of selectively energizable indicators associated with an enlarged scale reproduction of the unit of measure.

3,579,861

SINGLE-CHANNEL ELECTRONIC QUESTION-RESPONSE SYSTEM

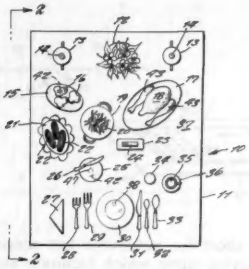
Thomas E. Hallett, Bainbridge Island, Wash., assignor to BRD Inc., Bainbridge Island, Wash.

Filed Feb. 6, 1969, Ser. No. 797,181
Int. Cl. G09b *5/00*
U.S. Cl. 35—48R **12 Claims**



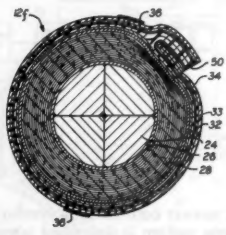
The teaching response system disclosed entails a control unit used by an instructor and a plurality of response unit used by individual students. The correct answer to a question is selected on a multiposition switch in the control unit and the students select their answers on similar multiposition switches in the response units. A timed correct answer signal is transmitted to the response units, wherein the students' answers are individually compared with the indicated correct answer and individual correctness signals are derived and transmitted over a single communication channel in sequence from the respective response units back to the control unit, in which they are recorded and displayed. The system relies upon time coincidence for determining correctness of the answers selected on the response units and sequencing means for monitoring the individual correctness signals.

3,579,862
SET A TABLE PUZZLE
Sue Ballen, 651 Desert Lane, Las Vegas, Nev.
Filed May 15, 1969, Ser. No. 824,921
Int. Cl. G09b 1/10; A63f 9/08
U.S. Cl. 35—8 1 Claim



An educational toy particularly for girls and for teaching them the proper place setting of a table, the device comprising a base panel having various design-shaped indentations for receiving corresponding configurated protrusions on the undersides of various dishes and other table placement items, thus serving as a puzzle for proper alignment of corresponding design indentation and protrusions while at the same time serving an educational purpose.

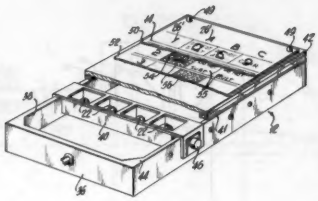
3,579,863
VIP JACKET UNDER SKID WIRE OF PAPER POWER CABLES
Martin H. McGrath, 200 E. 15th St., New York, N.Y.
Filed June 19, 1969, Ser. No. 834,795
Int. Cl. H02g 15/20
U.S. Cl. 174—10 7 Claims



Oil-impregnated paper cables are kept dry during storage, shipment and installation by covering the cable, under the skid wire, with a sheath comprising a laminated tape of aluminum coated with plastic on both sides. The plastic seals the seam of the sheath, and as the cable is pulled into a pipe the sheath is ruptured or torn in a haphazard manner by use of pliers, about once for each turn of the reel, to create breaks in the sheath which permit rapid and thorough evacuation of the completed system and also permit normal interchange of the pipe filling oil on load cycle changes.

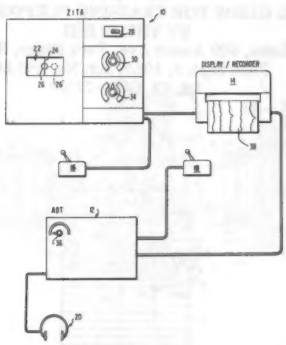
3,579,864
TEACHING DEVICE
Sheldon Littwin, 38-21 Garvey Place, Fairlawn, N.J., and Alexander Schure, 257 Wheatley Road, Old Westbury, N.Y.
Filed Mar. 4, 1969, Ser. No. 804,150
Int. Cl. G09b 7/06
U.S. Cl. 35—9 14 Claims

A response display system which is compatible to data processing and computer systems is described. The device displays information as the result of a particular inquiry such as in a learning system, teaching system, a game, or a directory. The display employs a multiple-leaf answer response sheet. An intermediate surface on the



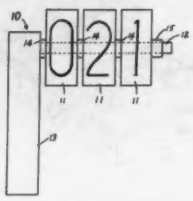
answer sheet is provided with response characters which are ordinarily concealed but may be silhouetted upon illumination by lamps placed in selected registration with the response characters. A matrix device is used to key punch data processing cards. Several embodiments are shown.

3,579,865
METHOD FOR MEASURING THE EFFECTS OF STRESS ON A MAN'S PERFORMANCE OF PRIMARY AND SECONDARY TASKS
Norman Kenneth Walker, 6613 Sulky Lane, Rockville, Md.
Filed Feb. 27, 1969, Ser. No. 802,977
Int. Cl. G09b 19/00
U.S. Cl. 35—22 8 Claims



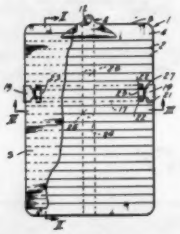
A method for measuring the effects of stress on a man's performance of a primary task, while a secondary task is also provided to be performed simultaneously by the test subject. The secondary task thus produces a "distraction stress" on the test subject thereby degrading his performance on both of the tasks. A Zero Input Tracking Analyzer (ZITA) is used as the primary task, which provides a unique tracking task that has no initial input or error source, and requires the test subject to null only his own error from his previous response after he has initiated the tracking task with his initial response. A number of variations, such as velocities and accelerations, as well as various amounts of lag or lead may be introduced into the response system. An Auditory Discrimination Task (ADT) can be used as the secondary task, to produce the "distraction stress" for the test subject while he is carrying out the primary task. This task requires that the test subject respond to the stimuli of high or low tones, presented to him by head phones, by moving a response stick forward or backward for the high and low pitch, respectively. A common display/recorder is used to record the performance on both tasks.

3,579,866
POLYBASE COUNTER
John Everett Miller, 4568 E. 45th St., Tulsa, Okla.
Filed Mar. 3, 1969, Ser. No. 804,058
Int. Cl. G09b 19/02
U.S. Cl. 35—32 4 Claims



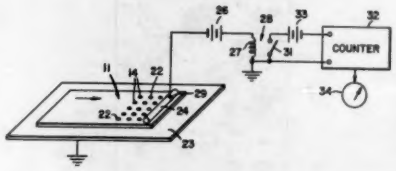
This invention relates to a simple mechanical counter to be used as an instructional aid in teaching number systems of various different bases. It consists of a plurality of prismatic-shaped or cylindrical-shaped blocks freely mounted on a shaft which extends from a handle. The lateral faces of these blocks are numbered according to the base of the number system being used—each block in a set of blocks for base two being numbered "0" and "1," each block in a set of blocks for base three being numbered "0," "1," and "2," each block in a set of blocks for base four being numbered "0," "1," "2," and "3," and so on in this manner. A set of blocks is mounted on the shaft in such a way that by rotating the blocks in the proper manner consecutive numbering in a given base number system may be shown.

3,579,867
WRITING GUIDE FOR TRAINING PURPOSES AND USE BY THE BLIND
Henry S. Kuhn, 609 Austin Ave., Park Ridge, Ill.
Filed Sept. 5, 1969, Ser. No. 855,604
Int. Cl. G09b 21/00
U.S. Cl. 35—38 10 Claims



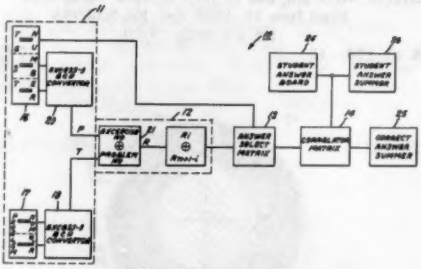
A writing guide in the form of a generally planar board, the upper face of which forms the surface on which may be disposed the paper sheet to be written on, the board having a series of parallel edges extending horizontally across at least a portion of the upper face of the board, each of which defines respective writing lines along and above which the particular line is to be disposed, with each of such edges forming an abutment at the writing line defined thereby which faces upward toward the top of the board and is operative to impart a distinct resistance to movement of a writing instrument, applied to such a paper sheet, in a downward direction below such writing line. In a preferred embodiment of the invention the writing surface between each pair of adjacent abutment-forming edges is inclined from the inner boundary of the lowermost of such pair to the outer boundary of the uppermost of such pair. Such abutments may be placed in any desired configuration to define specific writing areas on the board and means is also provided for indicating margins as well as a designated line of writing.

3,579,868
TEST SCORING ANSWER SHEET AND METHOD OF EMPLOYING SAME
Thaddeus Leroy Scott, 306 Hyde Drive, Hayward, Calif.
Filed Nov. 14, 1969, Ser. No. 876,835
Int. Cl. G09b 7/06
U.S. Cl. 35—48 10 Claims



An answer sheet for automatic test scoring, and scoring method employing same which facilitate automatic scoring with apparatus of an extremely simplified nature and attendant low cost. The sheet and method are such as to eliminate the usual requirement for a master score card and associated comparison circuitry, complex programmed logic circuitry, or the like, in the scoring machine.

3,579,869
AUTOMATIC ANSWER CONFIRMATION SYSTEM
Terry L. Hewitt, Schenectady, N.Y., assignor to General Electric Company
Filed Sept. 2, 1969, Ser. No. 854,417
Int. Cl. G09b 7/00
U.S. Cl. 35—48 7 Claims

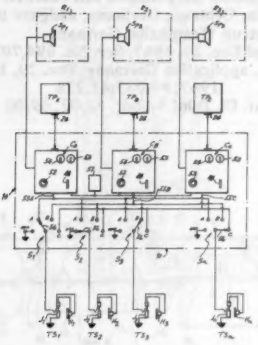


An automatic answer confirmation system employable with a student response system is described wherein the problem and test designator numerals are logically combined to extract a single correct answer for the multiple choice question being answered. To effect this result, the problem and test designator numerals are encoded into the answer confirmation system as binary coded decimal digits and the digits are summed in two exclusive-OR stages to produce a composite digital number related to the problem being answered. The composite number then is entered into an answer select matrix for extraction of the correct answer for the problem and the correct answer is compared with the student selected choice to automatically determine the correctness of the student's choice.

3,579,870
TEST ADMINISTERING APPARATUS
George K. Bennett, Bronxville, and Richard G. Buchanan, New York, N.Y., assignors to The Psychological Corporation, New York, N.Y.
Filed Aug. 27, 1969, Ser. No. 853,315
Int. Cl. G09b 7/00
U.S. Cl. 35—48R 10 Claims

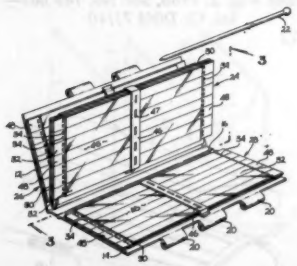
A test administering apparatus has a plurality of tape playback units individually controllable by an examiner at a

console to provide verbal instructions for, and to time a respective test, and the outputs of the playback units are selectively fed, as by station selector switches at the console, to any of a plurality of headphones or earpieces to be utilized by individual examinees and/or to selected loudspeakers in



examination rooms occupied by groups of examinees. An alert signal is provided from each operating playback unit to the examiner near the end of the allotted time for the respective test and the end of such allotted time is also signalled to the examiner as well as to each examinee taking the test.

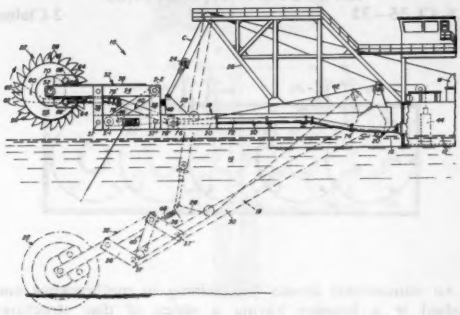
3,579,871
RECORD BOOK
Lloyd H. Eddington, 4330 Kling St., Burbank, Calif.
Filed July 24, 1969, Ser. No. 844,460
Int. Cl. B43l *1/00*
U.S. Cl. 35—66 **10 Claims**



A record book comprising a plurality of leaves wherein each leaf is centrally divided in the transverse direction with separate writing sections located on each side of the division. Each writing section includes a series of longitudinal separate writing spaces, each space having a wax backing with an opaque writing strip covering the backing and a clear plastic outside cover over the writing strip. The writing strip of each space can be removed from in contact with the wax backing. The stylus is to be retained when not in use within a hinge connection which maintains the entire book in the closed, not-in-use position.

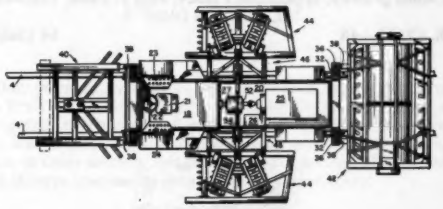
3,579,872
DREDGING APPARATUS WITH SURGE COMPENSATING MEANS
Robert J. Jantzen, Baltimore, Md., assignor to Ocean Science and Engineering, Inc., Washington, D.C.
Filed Nov. 5, 1968, Ser. No. 773,613
Int. Cl. E02f *3/90*
U.S. Cl. 37—66 **8 Claims**

A dredging system including a floating vessel, a ladder pivotally connected to the vessel and capable of being lowered to selected angular positions with respect to the vessel, an excavator at the free end of the ladder for digging and removing material, and a surge compensator on the ladder



for adjusting the length of the ladder in response to changes in distance between the vessel and the material being dredged.

3,579,873
RAILWAY BALLAST WORKING APPARATUS
John Knox Kershaw, Southport, Ind., assignor to The Marmon Group Inc., Chicago, Ill.
Filed Feb. 14, 1968, Ser. No. 705,421
Int. Cl. E01b *27/02*
U.S. Cl. 37—105 **15 Claims**

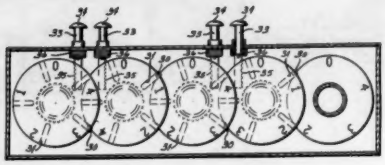


A self-propelled road and rail vehicle has four retractable rail wheels and has four pneumatic-tired drive wheels which are used for road travel and which ride on the rails during rail travel to produce high tractive effort for driving various roadbed maintenance and rehabilitation equipment. Such equipment may include a ballast distributing plow carried at the front of the vehicle and a track broom at the rear carried by head blocks on the vehicle, and in particular, has a side ballast-working wing mounted on an adjustable carrier at each side of the vehicle. All are controlled hydraulically from the vehicle cab, and have operating positions for use on the roadbed and transport positions within limited road travel dimensions. Each ballast-working wing has front scarifying teeth to break up compacted ballast on a side bank of the roadbed, two sets of discing elements to work and redistribute the loosened ballast of the side bank, and a mold board behind the disc units for reshaping the side banks. Each such wing is supported from the vehicle frame by an adjustable carrier providing both lateral and tilting adjustment over a wide range, and movement between operating and travel position, and the wing is readily removable for replacement by other bank-dressing units.

3,579,874
EDUCATIONAL DEVICE FOR TRAINING IN MATHEMATICS

Thomas B. Smith, 672 Jefferson St., Ste. Genevieve, Mo., and Raymond H. Swassing, Jr., 35 Northwood Apts., Storrs, Conn.

Filed Jan. 24, 1969, Ser. No. 793,681
Int. Cl. G09b 19/02; G06c 27/00
U.S. Cl. 35—32 3 Claims

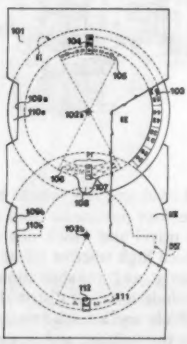


An educational device for training in mathematics embodied in a housing having a series of disc structures rotatably mounted therein, each structure including a rotatable axially aligned disc having a forward facing disclosing a sequence of numerical values, usually mathematical numbers contained in select bases other than only defined in the decimal system; the various disc structures cooperate to provide for rearrangement in sequence of the numerical values of the base system under investigation by incorporating catch means for effecting a degree of limited rotation of one disc upon rotation of the adjacent disc.

3,579,875
APPARATUS FOR THE SYSTEMATIC CORRECTION AND SELECTIVE APPRECIATION OF TEACHING TESTS

Pierre J. Dubost, 262, Avenue Daumesnil, 75 Paris, and Henry Perret, 7, Rue des Freres Lumiere, 92 Rueil-Malmaison, France

Filed Dec. 20, 1968, Ser. No. 785,709
Claims priority, application France, Feb. 1, 1968, 138,246
Int. Cl. G09b 19/08
U.S. Cl. 35—48 14 Claims



Apparatus for systematic correction and assigning marks for teaching tests comprising a case having windows. Codes carried by four rotary discs mounted in the case can be caused to be displayed in the windows by rotation of the discs. The codes comprise codes of partial identification of questions, codes of appraisement of possible answers to each question, codes indicating the correct answer, codes indicating the value of the various questions, which complete the identification of each question, codes indicating the degree of difficulty of the test, as many codes of choice as there are possible answers to each question, codes of the marks assigned to the various answers, and a code corresponding to the marks given to the chosen answer.

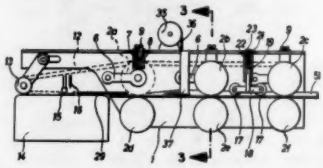
ERRATA

For Classes 37—66 and 37—105 see:
Patents Nos. 3,579,872 and 3,579,873

3,579,876
APPARATUS FOR FOLDING, FEEDING AND PRESSING PIECES OF FABRIC MATERIAL

Hans Freermann, Ochtrup, Germany, assignor to Firma Carl Schmale, Ochtrup Westphalia, Germany

Filed Dec. 29, 1967, Ser. No. 694,707
Claims priority, application Germany, Dec. 29, 1966, Sept. 9, 1967, 40,033;41,278
Int. Cl. D06f 61/06;, 63/02, 69/00
U.S. Cl. 38—2 18 Claims

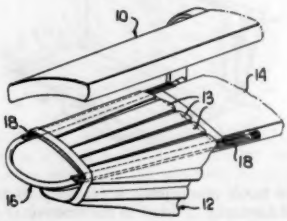


Apparatus for automatically hemming the edges of pieces of fabric material. The apparatus includes both a mechanism for use in machinery for folding over the edge of a piece of material and a mechanism for feeding the material into and out of the folding mechanism and for pressing the material in the area of the edge before as well as after its edge is folded.

3,579,877
DEVICE FOR HOLDING PLEATED MATERIAL

Aaron C. Bray, Jr., Evans Drive, P.O. Box 203, Houston, Miss.

Filed Aug. 2, 1968, Ser. No. 749,801
Int. Cl. D06f 71/40
U.S. Cl. 38—12 8 Claims



A device for facilitating pressing of pleated garments. A U-shaped frame is attached to the work surface of a pressing buck or ironing board. The frame has narrow strips of friction material affixed thereto so that when a pleated garment is placed over the work surface the friction material engages the garment and keeps the pleats from falling out.

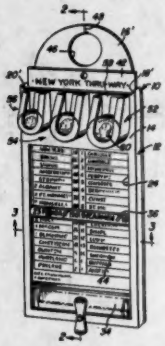
3,579,878
CARD RETAINER

Anthony L. Griffin, 107 Division St., Amsterdam, N.Y., and Earl G. Chetwynd, 6 Steele Ave., Gloversville, N.Y.

Filed Feb. 28, 1969, Ser. No. 803,310
Int. Cl. G09f 3/18
U.S. Cl. 40—10 9 Claims

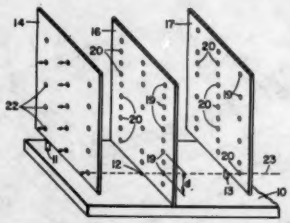
An envelope-type enclosure tor receiving a panellike card having indicia on at least one side thereof. The enclosure in-

cludes structure adapting it to be hung on a suitable support, a window in one side thereof with which the indicia of the



card may be registered and coin retaining pockets for retaining a plurality of different value coins to be paid out in tolls.

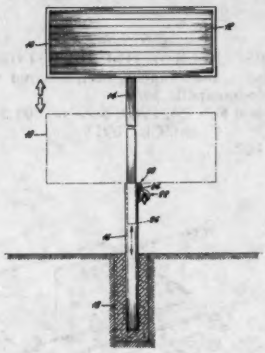
3,579,879
FLUIDIC CHARACTER DISPLAY DEVICE
Walter E. D. Samuels, Cleveland Heights, Ohio, assignor to Corning Glass Works, Corning, N.Y.
Filed July 22, 1969, Ser. No. 843,483
Int. Cl. G09f *11/00*
U.S. Cl. 40—28 **9 Claims**



A plurality of stacked movable slides is arranged such that a small movement of any one thereof from an inactivated position to an activated position will align information containing apertures of the moved slide with base apertures of the remaining slides to allow light to pass through the entire stack of slides and indicate a character that is outlined by the information apertures of the moved slide. A pair of pneumatic cylinders which are disposed at opposite ends of each of the slides move the slides between their inactivated and activated positions. A masking slide, which is moved from its inactivated to its activated position concurrently with the movement of any one of the plurality of slides to its activated position, prevents the display of any light when all of the plurality of slides are in their inactivated position.

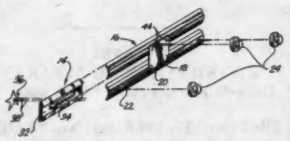
3,579,880
CAROUSEL SIGN
Edward L. Murphy, 2500 Farrier Place, Owensboro, Ky.
Filed June 16, 1969, Ser. No. 833,623
Int. Cl. G09f *11/10*
U.S. Cl. 40—33 **10 Claims**

A system for displaying a plurality of messages comprising a rotatable sign supporting member for mounting a plurality of signs. The supporting member is capable of rotation about



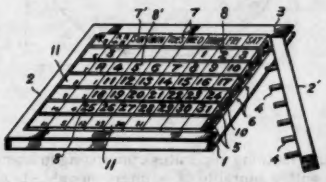
a vertical shaft and may be raised for viewing or lowered to ground level for facilitating the change of messages.

3,579,881
MILITARY RIBBON HOLDER
Gene F. Cherry, 331 Fountain Ave., Redlands, Calif.
Filed Feb. 14, 1969, Ser. No. 799,195
Int. Cl. A44c *3/00*
U.S. Cl. 40—1.5 **4 Claims**



One or more military campaign ribbons are mounted on the front of a uniform by sliding them lengthwise along an elongated channel-shaped metallic strip having a base portion with a pair of forwardly diverging sides. The base is arcuate in cross section, and the sides have arcuate rib portions with flanges adapted to slidably receive the ribbon.

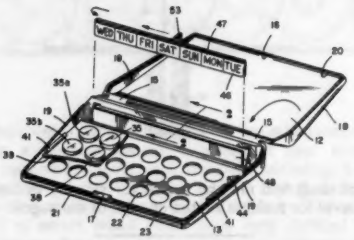
3,579,882
PERPETUAL CALENDER
Yoshio Miyahune, No. 238, Kitakase, Kawasaki-shi, Kanagawa-Ken, Japan
Filed Mar. 24, 1969, Ser. No. 809,893
Claims priority, application Japan, Apr. 17, 1968, 43/31257
Int. Cl. G09d *3/02*
U.S. Cl. 40—107 **2 Claims**



A mechanical type of perpetual calendar utilizing laterally interlocking blocks having both faces of different color and which are arranged by being moved and turned upside down for the purpose of distinguishing in appearance the week days from flag days or red letter days. A frame holder is provided to slidably receive the blocks in rows, and has a side

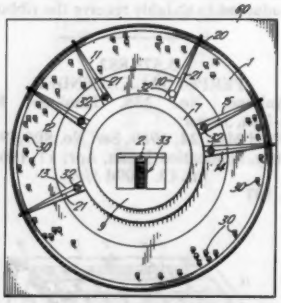
access frame member providing access for the blocks, and which frame member interlocks with the adjacent end blocks of the respective rows placed within the frame to hold same in a stabilized condition.

3,579,883
PILL DISPENSER WITH INDICATING MEANS
Thomas H. Hayes, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed Feb. 24, 1969, Ser. No. 801,543
Int. Cl. G09f 9/00
U.S. Cl. 40—107 6 Claims



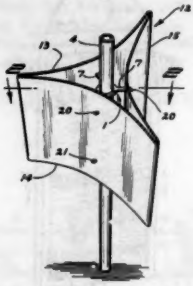
A pill dispenser with indicating means in the form of a flexible strip having a plurality of day indicia which are selectively adjustable to align any set of a predetermined number of successive indicia with a like number of columns of pills, thereby providing an indication of when each pill is to be taken.

3,579,884
FORWARD PLANNING APPARATUS
Nicholas P. Holwell Bray, Penny Farm, near Sherborne England
Filed Sept. 27, 1968, Ser. No. 763,079
Claims priority, application Great Britain, Oct. 13, 1967, Jan. 22, 1968, 46,796/67;3,303/68
Int. Cl. G09t 11/00
U.S. Cl. 40—110 6 Claims



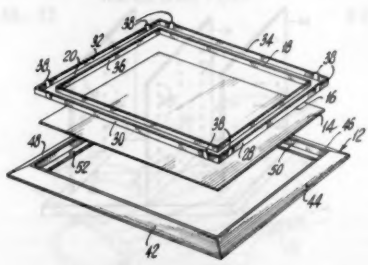
A forward planning apparatus comprising in combination a time scale with a plurality of pointers movable together over it in accordance with the passage of time, the pointers being set to indicate given periods of time between them and each representing a stage of an enterprise, and at least one multisided element representing a unit of the enterprise, the sides of said element each bearing an indication for one stage of the enterprise, such element being capable of application to the time scale with any side thereof in a given visible position to indicate the stage of the enterprise in hand.

3,579,885
ADVERTISING DISPLAY SUPPORT
Peter B. Iverson, Excelsior, Minn., assignor to Postmark Corporation, Minneapolis, Minn.
Filed Jan. 31, 1969, Ser. No. 795,614
Int. Cl. G09f 7/18
U.S. Cl. 40—145 6 Claims



A support structure for an advertising display in the form of a spider member having a plurality of notched legs for supportably engaging the sidewalls of a multisided advertising display through apertures therein, the spider member being mounted on an upright post or suspended by an overhead string. The spider member preferably has a ring-shaped central body portion within which an adapter may be removably inserted for attachment to a string or to the top end of a tubular support post.

3,579,886
PICTURE FRAME MOUNTING CONSTRUCTION
George T. Hughes, Newburgh, N.Y., assignor to Ovitron Corporation, Newburgh, N.Y.
Filed May 4, 1970, Ser. No. 34,140
Int. Cl. G09F 1/12
U.S. Cl. 40—152 5 Claims

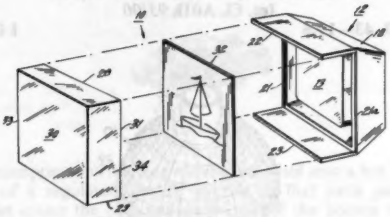


A low-cost picture frame assembly includes a stretch frame onto which a print, lithograph or the like is initially secured such as by an adhesive substance provided over at least a portion of one surface of the stretch frame. The inner frame having the print secured thereto is frictionally engaged by means of locking means provided on one of the frames, to thereby unite the two frames into the desired assembly.

3,579,887
DESK FRAME
Gunter Rochelt, 7 Schulinstr. 1110, Ulm, Germany
Filed Jan. 7, 1969, Ser. No. 789,466
Int. Cl. G09f 1/12
U.S. Cl. 40—152.1 8 Claims

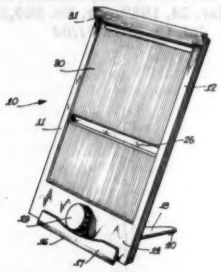
A frame for pictures and the like comprised of a transparent member and a lightweight supporting member having a much smaller total mass and weight than the transparent member. The supporting member positions and frames the transparent member on two opposite parallel sides while framing the picture inserted within the support member on all four sides so as to completely conceal the sides of the pic-

ture when the frame is fully assembled. The support member is provided with a recess along the rear surface to facilitate hanging of the frame upon a wall or other surface and is further provided with diagonally aligned support surfaces which together with the disposition of the center of gravity of the assembled frame, enables the frame to be supported



diagonally relative to a support surface upon any of the diagonal aligned surfaces of the support member. In addition, the two opposite parallel sides of the support member which embrace the transparent member as well as the two exposed sides of the transparent member may be optionally employed as supporting surfaces for supporting the frame assembly in a vertically aligned fashion upon a suitable supporting surface.

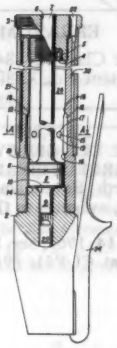
3,579,888
COPY HOLDER
Clifford Henry Burnham, 17 Sherwood Ave., Scarborough, Ontario, Canada
Filed Dec. 6, 1968, Ser. No. 781,735
Int. Cl. B41j *11/64*
U.S. Cl. 40—356 **5 Claims**



A copyholder for holding sheets of material, such as paper, for the copying of information therefrom, for example by a typist. The holder has a rectangular frame slightly larger than the sheets to be held, a stand for supporting the frame upright, and a bar extending across the frame to underline the line being copied. A knob, pulley and cord arrangement move the bar up and down on rotation of the knob. A resiliently biased member is positioned at the top of the frame for gripping the top of the sheet.

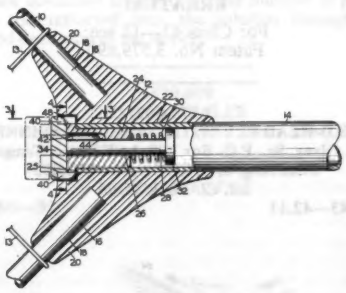
3,579,889
ANESTHETIZING GUN FOR USE IN SLAUGHTERING ANIMALS
Adolf Pallich, Brno, Czechoslovakia, assignor to Zbrojovka, narodni podnik, Brno, Czechoslovakia
Filed Mar. 10, 1969, Ser. No. 805,516
Claims priority, application Czechoslovakia, Mar. 18, 1968, 2084-68
Int. Cl. F41c *3/00*; A22b *3/02*
U.S. Cl. 42—1 **6 Claims**

An anesthetizing gun to be used in connection with the slaughtering of animals. The gun has a barrel which at its muzzle end is provided with a bore through which an anesthetizing instrument is axially guided. A piston is fixed to the rear end of the instrument and is slidable in the gun barrel while a suitable structure behind the piston supplies a gas under pressure to drive the piston forwardly to displace the instrument forwardly beyond the muzzle along its working stroke. The barrel is formed with passages communicating with the interior of the barrel and having front and rear ends displaced from each other along the barrel axis by a distance greater than the axial length of the piston, with the latter moving along these passages during part of the stroke of the



piston, so that the gas under pressure can flow through these passages from the rear to the front of the piston within the barrel and also through these passages from the front to the rear of the piston within the barrel. The barrel has at least one discharge opening through which the gas can escape, but this opening is closed by the piston itself when the gas flows through the passages around the piston.

3,579,890
COLLAPSIBLE FISH NET
James D. Maxwell, 11001 S.E. 19th St., Vancouver, Wash.
Filed June 2, 1969, Ser. No. 829,519
Int. Cl. A01k *77/00*
U.S. Cl. 43—12 **5 Claims**



A collapsible fish net including a hoop for supporting a flexible, mesh basket portion and also including a neck member secured to the hoop. The neck member has an opening therethrough which extends radially relative to the hoop, and a handle is slidably mounted in such opening for moving a portion thereof into the hoop to reduce the overall size of the net. Latch means are connected between the neck member and the handle and include a latch pin in the handle engageable with a bayonet slot in the neck member whereby the latch means are moved into a locking position for securing the handle in a use condition by a combination of relative axial movement and axial rotation of the neck member and handle. A lock member is used in the latch means to positively hold the neck member and handle latched together. The

hoop has disconnected ends secured to the neck member by frictional engagement in bores in the neck member. The hoop is made of springy material, and the disconnected ends of the hoop in the manufacture thereof are disposed apart a distance different than the distance between the bores in the neck member so that the frictional engagement of the ends of the hoop in the bores is accomplished by a springing action developed from springing the ends of the hoop to a spacing to fit in the bores.

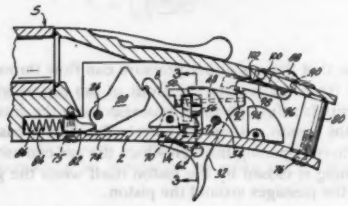
ERRATUM

For Class 42—84 see:
Patent No. 3,580,113

3,579,891
SINGLE SELECTIVE TRIGGER SYSTEM FOR DOUBLE BARREL FIREARMS

John J. Kuzma, North Haven, and Robert I. Gawrych, Killingworth, Conn., assignors to Olin Mathieson Chemical Corporation

Filed Feb. 14, 1969, Ser. No. 799,217
Int. Cl. F41c *19/00*
U.S. Cl. 42—42 **2 Claims**



A trigger system for double barrel firearms having a pair of hammers and a single trigger, a selector actuated by the trigger and operable to release only one of the hammers from its cocked position while permitting the other hammer to remain undisturbed in its cocked position. The selector then being operable to release the other hammer from its cocked position upon a second actuation of the trigger.

ERRATUM

For Class 43—12 see:
Patent No. 3,579,890

3,579,892
BEAD-HEAD FLY WITH DANGLING SPINNER

James O. Olvey, Sr., P.O. Box 287, La Follette, Tenn.

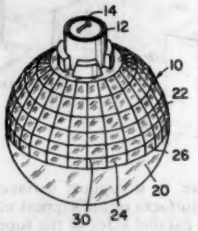
Filed Aug. 8, 1969, Ser. No. 848,493
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.11 **9 Claims**

A bead-head fly lure for jigging, casting or trolling for game fish, comprising a molded bead head of the weight desired. The forward right-angled end of the shank of the hook is embedded in the upper half-portion of the head in a manner to expose the line eye. The hook end of the shank projects beyond a flared neck on the rearward side of the head to accommodate either live or artificial bait, usually a bucktail. A swivel on the bottom of the head is equipped with a snap fastener for a dangling spinner.

3,579,893
REFLECTING FISHING FLOAT

Henry S. Wolfe, Beaver Hill Bldg., Jenkintown, Pa.

Filed Dec. 23, 1968, Ser. No. 786,203
Int. Cl. A01k *93/00*
U.S. Cl. 43—17.5 **1 Claim**



A reflecting fishing float comprising a buoyant body member preferably of generally spherical configuration having an upper hemispherical portion provided with a plurality of flat, angularly disposed reflecting surfaces thereon adapted to reflect rays from the sun directly to a viewer. The lower hemispherical portion has a smooth external configuration. A plunger means extends axially through the upper hemispherical portion and has line-attaching means thereon.

3,579,894
FISH-IMPALING AND GRAPPLING IMPLEMENT

Ephraim Henry Kidder, 617 Selma, Cadillac, Mich.

Filed Mar. 24, 1969, Ser. No. 809,513
Int. Cl. A01k *81/04*
U.S. Cl. 43—6 **8 Claims**

A fish-impaling, grappling and landing implement embodying self-contained features which well serve the purposes for which they have been devised. An elongated handle embodies compact and convenient telescoping latch-retained sections. The forward end embodies an axial spearing prong and openable and closable grappling jaws provided with inwardly angled fish-impaling tines. A shiftable latch-retained sleeve provides a ferrule which releasably fastens pivoted shank portions of the jaws in fish grappling position.

3,579,895
ARTIFICIAL FISH LURE AND METHOD OF MAKING SAME

Vernon B. Orn, 12733 S.E. 163rd, Renton, Wash., and Richard E. Cook, 9821 N.E. 16th, Bellevue, Wash.

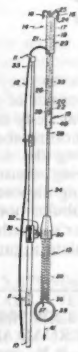
Filed Oct. 21, 1968, Ser. No. 769,238
Int. Cl. A01k *85/00*
U.S. Cl. 43—17.6 **19 Claims**

Artificial fish lures, such as simulated bait fish eggs, characterized by a substantially homogeneous body form,

either as single spheres or as fused clusters. A typical formulation involves highly plasticized polyvinyl chloride resin with a cured Shore-A-Durometer hardness of 3—10, and with fish-attracting odorant and plasticizer, such as salmon oil, dispersed throughout each spherical egg and continually forming a milky emulsion at the surface when the egg is exposed to water. A typical method of forming the simulated

eggs comprises introducing unfused plastisol into a hot liquid bath of a regulated specific gravity so that each plastisol droplet enters the bath and drops toward the bottom of the bath until its temperature increases sufficiently to lower its specific gravity whereupon each droplet rises to the surface of the bath as a substantially spherical body. The spherical bodies are then removed and cooled, either singly or as clusters.

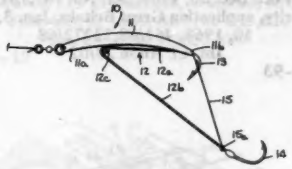
3,579,896
SPRING-OPERATED FISHING ROD DEVICE
Thomas Flottorp, 207 Argyle St., Regina, Saskatchewan, Canada
Filed July 18, 1969, Ser. No. 842,919
Int. Cl. A01k *91/02*
U.S. Cl. 43—19 **2 Claims**



A device consisting of a tension spring secured by one end thereof to a rod and having an ejector rod extending through the spring to the other end, terminating in a finger-engaging portion so that the spring can be extended, thus drawing the ejector through the spring. A socket is provided on the other end of the ejector rod within which a lure assembly may be engaged so that when the spring is released, the ejector rod is moved forwardly thus ejecting the lure in axial alignment with the coil spring.

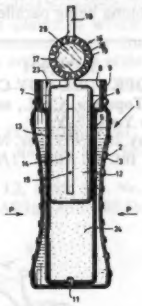
3,579,897
FISH-CATCHING APPARATUS WITH SNAP-ACTUATABLE HOOKS
Dean V. Babst, 31 Linden Road, Ho-Ho-Kus, N.J.
Filed Apr. 18, 1969, Ser. No. 817,524
Int. Cl. A01k *83/00*
U.S. Cl. 43—35 **5 Claims**

Fish-catching apparatus including a spring mechanism having a pair of spring legs with fish hooks extending toward each other from each of the legs. The spring mechanism biases the legs toward each other and a trigger is fixed relative to one leg and releasably fixable relative to the other leg for holding the legs and hooks apart from each other against the bias of the spring. When a fish bites at the apparatus the fish will strike the trigger moving the trigger from between the spring legs to allow the legs and hooks to move toward



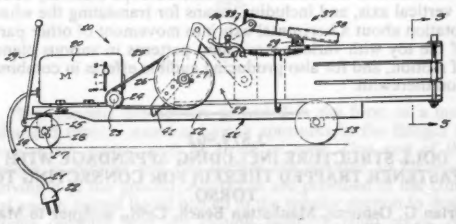
each other so the fish biting at the apparatus will be caught on at least one of the hooks.

3,579,898
BUBBLE BLOWING DEVICE
Rolf Hein, Gartenstrasse 85, Tubingen, Germany
Filed Jan. 21, 1969, Ser. No. 792,723
Claims priority, application Germany, Jan. 25, 1968, P 16 78 342.9
Int. Cl. A63h *33/28*
U.S. Cl. 46—7 **10 Claims**



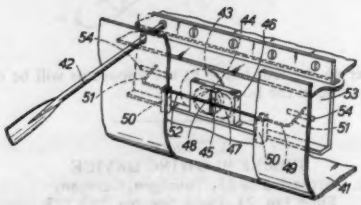
A compact bubble blowing device wherein a film-forming bubble solution and the member from which the bubbles are blown, are contained in one unit. The member is projected out of, and retracted into, the solution through a singlehanded operation of the device.

3,579,899
TOY HAY BALER
Amos F. Hannah, Hollister, Calif. (Star Rte. Box 239, Snelling, Calif. 95369)
Filed Sept. 12, 1968, Ser. No. 759,415
Int. Cl. A63h *33/30*
U.S. Cl. 46—39 **4 Claims**



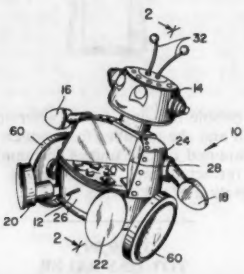
A mechanical toy for baling hay, the toy including operative mechanism for feeding and compressing hay material within a press so to form rectangular configurated hay bales which are tied together so to retain their shape.

3,579,900
TOY WATERCRAFT
David Argent Brown, 46 Willway Ave., Richmond, Va.
Filed Dec. 30, 1968, Ser. No. 787,781
Claims priority, application Great Britain, Jan. 3, 1968, May 10, 1968, 461/68;22272/68
Int. Cl. A63h 23/02
U.S. Cl. 46—93 13 Claims



A toy watercraft propelled by a rowing action, The cars are driven by a motor through a double cam device which imparts reciprocating horizontal and vertical components of motion to the oars so that they move in oblong paths, the longest axis of the oblong being parallel to the water surface.

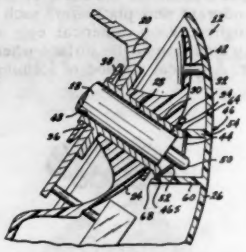
3,579,901
KALEIDOSCOPE PULL-TOY CONSTRUCTION
Leslie Perhacs, Jr., Topanga, Calif., assignor to Cragstan Industries, Inc., New York, N.Y.
Filed May 28, 1969, Ser. No. 828,633
Int. Cl. A63h 11/10
U.S. Cl. 46—103 19 Claims



The present invention pertains to a pull-toy construction employing a horizontally disposed kaleidoscope assembly wherein there is provided means for translating the rotational movement of the wheels of the toy about a horizontal axis into rotational movement of the kaleidoscope assembly about a vertical axis, and including means for translating the wheel rotation about a horizontal axis into movement of other parts of the toy with various movement patterns in various planes of motion, and for also producing audible effects in combination therewith.

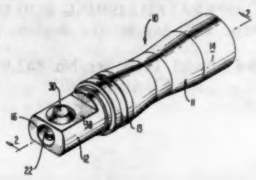
3,579,902
DOLL STRUCTURE INCLUDING APPENDAGE WITH FASTENER TRAPPED THEREIN FOR CONNECTING TO TORSO
Brian G. Osborne, Manhattan Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Mar. 5, 1969, Ser. No. 804,503
Int. Cl. A63h 11/00
U.S. Cl. 46—149 4 Claims

A walking doll wherein each leg can be attached to the torso after the leg has been completely finished, to eliminate extensive handling of the entire doll. The leg has two housing halves, one formed with a mount for holding a fastener which locks onto a torso shaft pushed into the leg, and the other



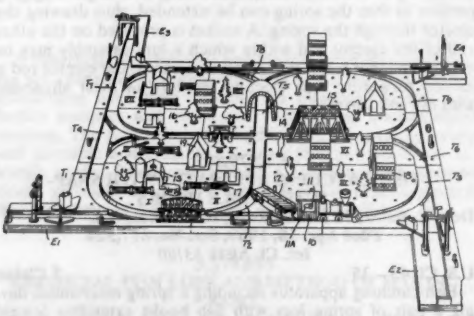
half constructed to trap the fastener on the mount until the torso shaft is inserted into the leg.

3,579,903
ANIMAL CALL
Johnny E. Stewart, P.O. Box 7765, Waco, Tex.
Filed Sept. 9, 1968, Ser. No. 758,329
Int. Cl. A63h 5/00
U.S. Cl. 46—180 9 Claims



This disclosure relates to an animal call of the type adapted to simulate the sounds of game birds and other wild life, and includes a tubular body through which air is blown to vibrate a reed for generating sound waves and a depressible plunger for contacting the reed to vary the pitch as desired, the plunger being constructed of relatively soft resilient material and being disposed immediately adjacent a mouthpiece end of the tubular body whereupon the plunger can be depressed by a user's mouth, lips or teeth thus leaving his hands free to manipulate a gun, camera or other instrument.

3,579,904
TOY RAILROAD ASSEMBLY
Robert Genin, Scarsdale, N.Y., assignor to Child Guidance Toys, Inc., Bronx, N.Y.
Filed July 7, 1969, Ser. No. 839,180
Int. Cl. A63h 19/36
U.S. Cl. 46—216 8 Claims



A versatile toy railroad assembly in which various track layouts may be formed by different arrangements of square boards, each board having a depressed track section therein adapted to communicate with track sections on contiguous

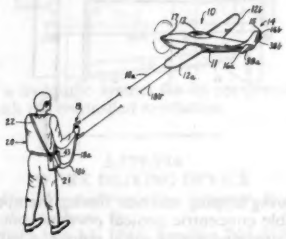
boards to define a track layout whose pattern is determined by the manner in which the boards are interrelated. The boards are also provided with peg holes adapted to receive the supporting pegs of diversified scenic elements, such that by straddling adjacent boards with scenic elements, the boards are interlocked thereby to maintain a predetermined layout.

3,579,905

AIRCRAFT, BATTERY AND BATTERY-CARRYING MEANS, WHEREIN THE CONDUCTIVE WIRES SERVE AS MANIPULATING WIRES

James T. Radford, 1219 Van Buren, Houston, Tex., and Ronald A. Mizrany, 4321 Greeley, Houston, Tex.

Filed Oct. 16, 1967, Ser. No. 675,417
Int. Cl. A63h *27/04*
U.S. Cl. 46—244 **7 Claims**



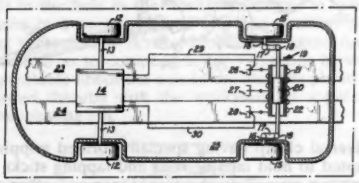
A fractional horse power motor in a toy aircraft has slack conductive wires therefrom connected to opposite ends of the crossarm of a pivotally mounted bellcrank with its short arm connected to control the elevator. From the crossarm the wires extend for operative distance to a handle, including a switch and thence to a battery housed in a case having a shoulder strap. A single operator needs only to hold the handle and to carry the power source, as a battery, at which the wires terminate; thus pressing the switch drives the engine and manipulating the wires for bellcrank movement controls flight elevation.

3,579,906

MINIATURE STEERABLE VEHICLE AND TRACK SYSTEM THEREFOR

David H. La Forge, R.R. 1, Box 648, Makawao, Hawaii

Filed Dec. 19, 1969, Ser. No. 886,572
Int. Cl. A63h *33/26*
U.S. Cl. 46—244 **30 Claims**



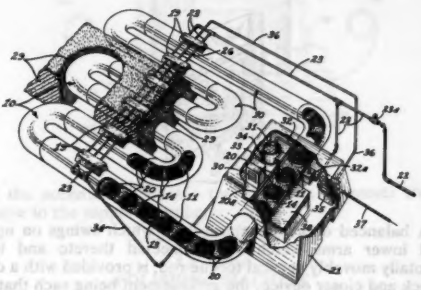
A miniature four-wheeled vehicle is provided with a solenoid having a linearly movable armature for turning the steering wheels in response to electrical impulses received by a set of contact brushes on the vehicle which selectively engages the conductive track system on a supporting surface which also supplies power to the vehicle and includes conductive guiding areas on the surface for steering the vehicle through a switch in the track system.

3,579,907

AUTOMATED CONTROLLED ENVIRONMENT FOR CONTINUOUS PRODUCTION OF PLANT LIFE

Rodney J. Graves, 119 E. Hancock, Williams, Ariz.

Filed Oct. 3, 1969, Ser. No. 863,620
Int. Cl. A01g *9/18, 31/00*
U.S. Cl. 47—17 **7 Claims**



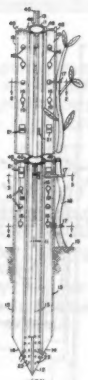
An automated controlled environment system for the continuous production of plants in which there is provided a cool, low-light environmental unit for the production of hydroponic oat, barley and the like grass plants.

3,579,908

SUPPORT FOR GROWING PLANTS

John Robert Morgan, Palmer Hill Road, Old Greenwich, Conn.

Filed May 12, 1969, Ser. No. 823,597
Int. Cl. A01g *17/06;* **B05b** *13/02*
U.S. Cl. 47—45 **15 Claims**

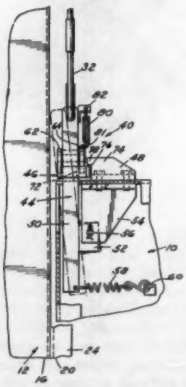


Plant support devices are provided in the form of a multiflanged tubular member having apertures in the flanges to receive tie means, such as string or rope. One end of the device is conical and the flanges are beveled to facilitate driving it in the ground. Apertures are provided in the conical end to permit liquid placed in the tubular section to drain slowly outward into the ground adjacent plant roots. An elaborate support system such as for vines may be provided by connecting a plurality of such devices together with tubular branch connectors. Modifications include outlet openings along the length of horizontal tubes to permit spray patterns of liquid introduced through a branch of one of the branch connectors. Various other modifications are also provided.

3,579,909
BALANCED DOOR
Louis L. Schacht, New York, and Ralph Turner, Queens County, N.Y., assignors to Schacht Associates, Inc., Bronx, N.Y.
Filed July 16, 1969, Ser. No. 842,151
Int. Cl. E05d *15/30*
U.S. Cl. 49—252 **3 Claims**

A balanced door, namely, a door which swings on upper and lower arms which are connected thereto and to a pivotally movably vertical torque rod, is provided with a door check and closer device, the arrangement being such that the door check and closer device can be readily installed through the top of the door and readily removed through the top of the door, when the door is opened and tilted in its own plane in a direction away from the torque rod, thereby making it unnecessary to remove the door from the door frame to install or remove the door check and closer device. The connections between the door and said arms are within the door thus eliminating the pivot projections referred to in the art as "blisters" or knuckles.

3,579,910
LOCKING MEANS FOR A VERTICALLY MOVABLE DOOR
Allan E. Wetter, Bloomfield Hills, Mich., assignor to Byrne Doors, Inc., Ferndale, Mich.
Filed Mar. 27, 1969, Ser. No. 811,175
Int. Cl. E05d *17/00*
U.S. Cl. 49—322 **11 Claims**

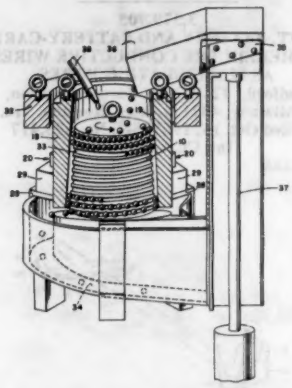


Safety latch means for locking a vertically movable door against accidental descent. A latch carried by the door has a notch which normally freely receives a guide angle flange extending along the path of door movement. The latch turns or cocks to cause the notch to bind upon the flange and lock the door against accidental descent in response to the failure of the cable.

ERRATUM

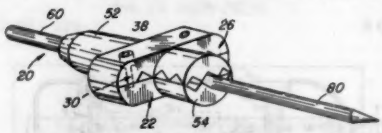
For Class 49—394 see:
Patent No. 3,579,934

3,579,911
BALL BEARING LAPPING MACHINE
Floyd Steinmetz, 205 W. Timonium Road, Timonium, Md.
Filed June 5, 1968, Ser. No. 734,683
Int. Cl. B24b *7/00, 9/00*
U.S. Cl. 51—3 **8 Claims**



A ball bearing lapping machine having members with relatively rotatable concentric conical portions, one of the conical portions provided with a spiral groove, a ball feed device for depositing the ball bearings to be lapped at the top of the members, the ball bearings, entering the spiral groove and rolled therealong between the members upon rotation of one member with respect to the other, a receptor to receive the ball bearings as they are discharged upon completion of their rolling course through the spiral groove and an elevator for returning the ball bearings from the receptor to the ball feed device for recycling the ball bearings through the machine. A means to supply lapping compound to space between the conical members and the ball bearings therein is also provided.

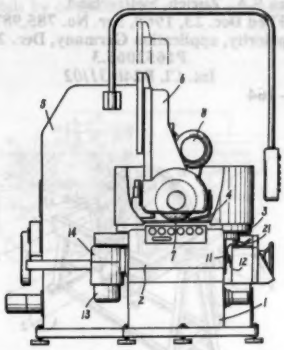
3,579,912
UNIVERSAL CLAMP FOR ABRASIVE TOOL
Walter B. Panko, Chicago, and Julius P. Steindler, Wilmette, Ill., assignors to Engis Equipment Company, Morton Grove, Ill.
Filed Apr. 25, 1969, Ser. No. 819,244
Int. Cl. B24b *7/00, 9/00*
U.S. Cl. 51—59SS **2 Claims**



A universal clamp having specially formed gripping faces and adapted to hold lapping rods and lapping sticks of various diameters as well as abrasive stones and other abrasive tools in any position of use.

3,579,913
HYDROELECTRICAL CONTROL FOR A ROTARY SURFACE GRINDER
Kinichiro Suzuki, Tokyo, Japan, assignor to Sansei Manufacturing Co., Ltd., Minato-ku, Tokyo, Japan
Filed Dec. 12, 1968, Ser. No. 783,345
Int. Cl. B24b *7/02*
U.S. Cl. 51—95 **1 Claim**
Hydroelectrical control for a rotary surface grinder having

a table driven by an electric motor for its controlled revolution and by a hydraulic system for its reciprocal movement correlated with the controlled revolution.

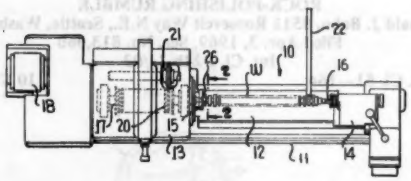


3,579,914

WORK DRIVING DEVICE

Ralph E. Price, Waynesboro, Pa., assignor to Landis Tool Company, Waynesboro, Pa.

Filed July 12, 1968, Ser. No. 744,350
Int. Cl. B24b *17/02*; B25b *41/06*
U.S. Cl. 51—101 12 Claims



This disclosure relates to a work driving apparatus, particularly for a cam contour grinder, for applying a driving torque at two angularly spaced points on a workpiece so that the entire force transmitted by the work driving apparatus acts to turn the workpiece and there is no force to cause radial displacement of the workpiece. The work driving apparatus is particularly adapted for use in conjunction with a workpiece having a flange at one end and an orienting hole in the flange. The work driving apparatus includes a driving block which carries a locating pin which is proportioned for a close fit in the hole in the workpiece flange to maintain the workpiece in a predetermined oriented position during the grinding thereof. The driving block is mounted for floating movement so as to compensate for variations in workpieces and is pivotable about the axis of the locating pin to engage a jaw carried thereby with the workpiece at a point remote from the locating pin.

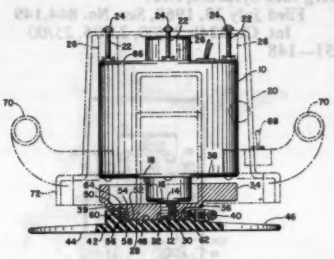
3,579,915

FREE ORBITAL SURFACE TREATING TOOL

James Glenn Satterthwaite, 1 Dogwood Trail, Chesapeake, Va., and Waverly Hope Wilcox, 1214 Sheppard Ave., Norfolk, Va.

Filed Nov. 8, 1968, Ser. No. 774,393
Int. Cl. B24b *23/02*
U.S. Cl. 51—120 10 Claims

There is provided a tool for treatment or modification of a surface, for example, buffing, having drive means including a shaft, an eccentric member secured to the shaft and rotatable therewith, a supporting member which is adapted to support a surface modifying agent, e.g. buffing material and buffing compound, the support member being characterized by a recess dimensioned to surround a peripheral portion of the eccentric, and bearing means coacting between the recess and the eccentric to enable the eccentric to rotate freely relative to the support member.

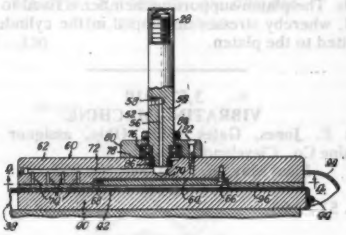


3,579,916

POLISHING MACHINE

Stephen A. Boettcher, Deerfield (Riverwoods), and Louis F. Simonetti, Morton Grove, both of, Ill., assignors to Speedfam Corporation, Des Plaines, Ill.

Filed Nov. 15, 1968, Ser. No. 776,024
Int. Cl. B24b *7/04*
U.S. Cl. 51—131 6 Claims



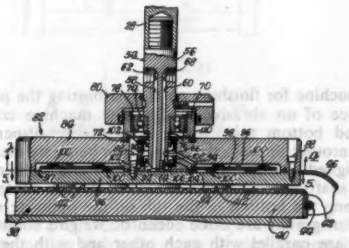
A polishing machine spindle assembly and associated load plate unit having passageway means opening at the lower surface of the unit and adapted to be placed under vacuum for maintaining a workpiece in engagement with the lower surface of the unit.

3,579,917

POLISHING MACHINE

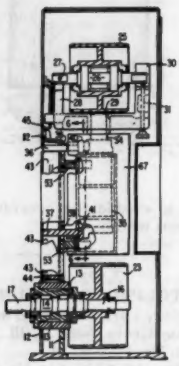
Stephen A. Boettcher, Deerfield (Riverwoods), and Louis F. Simonetti, Morton Grove, Ill., assignors to Speedfam Corporation, Des Plaines, Ill.

Filed Nov. 15, 1968, Ser. No. 776,023
Int. Cl. B24b *7/04*
U.S. Cl. 51—131 7 Claims



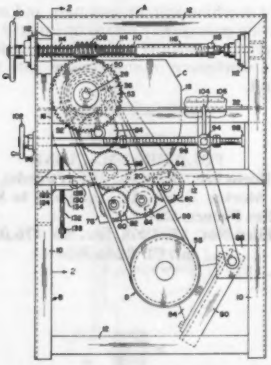
A polishing machine load plate unit to which workpieces are affixed for polishing, and through which a liquid is selectively circulated.

3,579,918
PLATEN-TYPE BELT GRINDER
Robert L. Schaller, Camillus, N.Y., assignor to Sundstrand-Engelberg Inc., Syracuse, N.Y.
Filed July 23, 1969, Ser. No. 844,149
Int. Cl. B24b *21/00, 23/06, 25/00*
U.S. Cl. 51—148 5 Claims



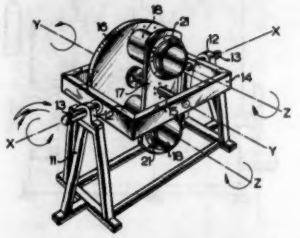
The frame of the grinder includes inner and outer spaced apart sidewalls. The abrasive belt idler roll is carried by a cylinder and piston structure which is fixed to one of the sidewalls. The platen-supporting member is fixed to the other sidewall, whereby stresses developed in the cylinder are not transmitted to the platen.

3,579,919
VIBRATING MACHINE
Charles E. Jones, Gates Mills, Ohio, assignor to Sabin Machine Co., Cleveland, Ohio
Filed May 16, 1969, Ser. No. 825,227
Int. Cl. B24b *31/06*
U.S. Cl. 51—163 10 Claims



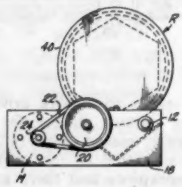
A machine for finishing parts by vibrating the parts in the presence of an abrasive media. The machine comprises a rounded bottom tube which is pivotably suspended in a frame around the tub, the suspension being by means of axially aligned shafts which project from end walls of the tub. These shafts are offset to one side of the tub center of gravity. Along the bottom of the tub on the opposite side of the center of gravity are three eccentric weights rotated on axes which are parallel with each other and with the tub pivot axis. The weights are so phased as to produce centrifugal forces which effectively vibrate the tub, and at the same time minimize the vibration transmitted to the frame around the tub.

3,579,920
POLISHING MACHINE FOR WORKPIECES
Ernst Helberger, Reichenbach Rechberg, Germany, assignor to Jualdipex S.A., Zurich, Switzerland
Filed Dec. 23, 1968, Ser. No. 785,987
Claims priority, application Germany, Dec. 22, 1967, P1652065.3
Int. Cl. B24b *31/02*
U.S. Cl. 51—164 20 Claims



A polishing machine is provided which has an oscillatable frame supporting at least one hollow drum adapted for receiving the workpieces to be treated, each drum being rotatably supported from a pair of discs which in turn are supported from the frame for rotation about an axis which is perpendicular to the axis of rotation of the frame and is in the same plane therewith. The drum undergoes movement influenced by three independent rotations which are respectively controllable.

3,579,921
ROCK-POLISHING RUMBLE
Donald J. Bobo, 8511 Roosevelt Way N.E., Seattle, Wash.
Filed Apr. 3, 1969, Ser. No. 813,060
Int. Cl. B24b *31/02*
U.S. Cl. 51—164 10 Claims

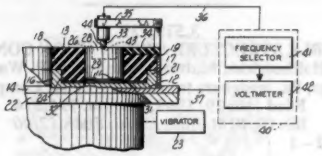


A molded tubular drum of elastomeric material having a generally cylindrical external shape and a polygonal internal shape. Identical and closures for the drum, each also of molded elastomeric material and each having a radial end wall, an axially inwardly extending center plug shaped to snugly fit within the inner cavity of the drum, and a peripheral drive rim. A girth rib and girth groove seal is provided between each drive rim and the drum. The drive rim has a reduced diameter portion axially inwardly of the seal which receives a squeeze band acting to force the drive rim radially inwardly and the sealing surfaces of the groove and rib together.

3,579,922
APPARATUS FOR ABRADING ARTICLES
Nicholas J. Mandonas, Medford, and Paul A. Ryll, Haverhill, Mass., assignors to Western Electric Company, Incorporated, New York, N.Y.
Filed Oct. 11, 1968, Ser. No. 766,735
Int. Cl. B24b *49/04*
U.S. Cl. 51—165 7 Claims

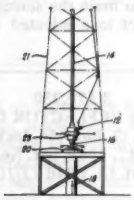
Apparatus for fine lapping of thin piezoelectric crystals to a desired resonant frequency characteristic includes a number of holders urging and lapping the crystals against a vibrating, relatively movable lapping plate bearing very fine

abrasive particles. Probes are successively pivoted into engagement with selected holders, one at a time, during lapping to sample the instant resonant frequency of each of the vibrating crystals by coupling the crystals successively into a



test circuit. While lapping of the other crystals continues, a crystal which has attained the desired frequency characteristic may be withdrawn with its holder and replaced by another holder and crystal.

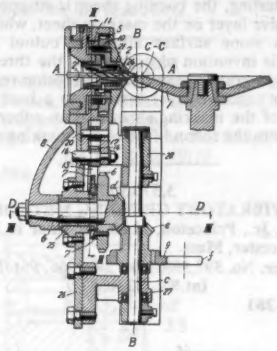
3,579,923
DRESSING TOOL METHOD AND MEANS
Prentiss Whited, 603 N. Jackson, Pratt, Kans.
Filed Aug. 4, 1969, Ser. No. 847,024
Int. Cl. B24d *5/00, 7/00;* **B24b** *19/00*
U.S. Cl. 51—209R **7 Claims**



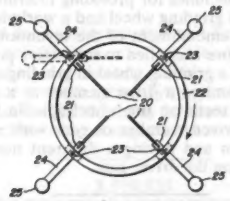
This invention relates to a method and means of dressing abutting shoulders of oil well drill pipe stems on location. More particularly, this invention is a dressing tool means having spring-biased abrasive plates engageable with the shoulders of mating pipe stems. The method of dressing pipe joints involves the steps of utilizing the working tongs and the drill rotary table for the required power to efficiently and effectively dress abutting shoulders of drill pipe stems on location.

3,579,924
METHOD FOR CONTINUOUSLY GRINDING A DRILL TIP END INTO A NORMAL SHAPE AND INTO A SPLIT POINT
Mataichi Saito, No. 13-3 6-chome Chuo, Ota-ku, Tokyo-to, Japan
Filed Apr. 16, 1968, Ser. No. 721,683
Claims priority, application Japan, May 10, 1967, 42/29150
Int. Cl. B24b *19/64, 3/24*
U.S. Cl. 51—288 **1 Claim**

The specification discloses a novel method for continuously grinding a drill tip end into a normal shape and into a split point form, without removing and replacing the drill between the normal shape grinding procedure and the split point grinding procedure. A drill to be ground is first ground at its tip end portion into a normal shape, and subsequently but continuously to the preceding procedure the drill tip end is ground into a split point, whereby the drill can be ground in two ways in a single step of process. This means a great advantage over the prior art in speed of the processing and quality of the resultant product.

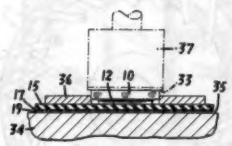


3,579,925
ABRASIVE WHEEL
William P. Densmore, Worcester, Mass., assignor to Norton Company, Troy, N.Y.
Filed Dec. 2, 1968, Ser. No. 780,404
Int. Cl. B24d *9/00*
U.S. Cl. 51—330 **1 Claim**



A rotary abrasive device having a plurality of independent depending leaves mounted internally of a rotary hub structure for abrading or polishing purposes.

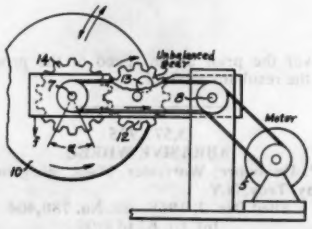
3,579,926
SANDBLASTING STENCIL AND METHOD OF MAKING SAME
Anthony Mario Gaspari, Montreal, Quebec, Canada, assignor to Pall (Canada) Ltd., Montreal, Quebec, Canada
Filed Aug. 2, 1968, Ser. No. 749,722
Int. Cl. B24b *55/00*
U.S. Cl. 51—262 **9 Claims**



This invention provides a method for precutting sandblasting stencil by cutting with a die a two-ply stencil comprising a soft, elastomeric masking sheet of material resistant to erosion by sandblasting, having on one face a layer of adhesive which is removably bonded to a harder, flexible nonelastomeric plastic backing sheet, so as to cut out the

stencil pattern through the masking sheet without cutting through the backing sheet. The second face of the masking sheet is then covered with an adherent sandblast-erodable retaining sheet to form a three-ply die-cut stencil sheet. For use in sandblasting, the backing sheet is stripped off, exposing the adhesive layer on the masking sheet, which is thereby bonded to a stone surface after the cutout portions are removed. This invention also provides the three-ply die-cut stencil sheet comprising sandblasting-erosion-resistant masking sheet, an adhesive layer bonded to a backing sheet on one surface of the masking sheet and an adherent retaining sheet bonded to the second face of the masking sheet.

3,579,927
VIBRATORY GRINDING METHOD
Loring Coes, Jr., Princeton, Mass., assignor to Norton Company, Worcester, Mass.
Division of Ser. No. 597,598, Nov. 29, 1966, Pat. No. 3,451,171.
Int. Cl. B24b *1/00*
U.S. Cl. 51—281 **4 Claims**



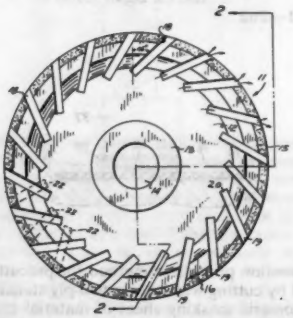
This invention relates generally to improvements in methods and machines for grinding wheels, and particularly to methods and machines for providing intermittent pressure contact between a grinding wheel and a workpiece.

In a particular embodiment of the invention, intermittent or vibratory pressure is applied to successive positions on the cutting surface of a grinding wheel in grinding contact with a workpiece by mounting a drive member or a gear having a given number of teeth on the wheel spindle for driving or meshing with a driven member or gear with an unbalanced weight distribution and having a different number of teeth from the number on the driver gear.

ERRATUM

For Class 51—315 see:
Patent No. 3,579,933

3,579,928
SELF-AIR COOLING ABRADING WHEEL
Gerhard R. Held, 22644 Shiell Drive, Mount Clemens, Mich.
Filed July 14, 1969, Ser. No. 841,439
Int. Cl. B24b *55/02*
U.S. Cl. 51—356 **4 Claims**



A self-air cooling abrading wheel having a flat annular web and an axially enlarged annular rim with a peripheral abrading surface thereon, and with a first series of elongated angularly related slots formed in said rim around its periphery extending inwardly of the rim for a portion of its width, said slots having air inlets adjacent said web and outlets extending radially outward of said rim, and a second series of said angularly related slots extending inwardly from the other side of said web, the slots of the second series being alternated with the slots of the first series and independent thereof.

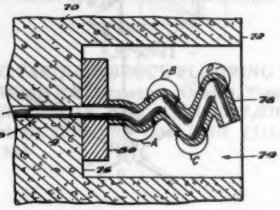
3,579,929
FLEXIBLE STRUCTURE ORIENTATION CONTROL
Philip D. Holthenrichs, Malvern, and Robert P. Wanger, Valley Forge, Pa., assignors to General Electric Company
Filed Jan. 29, 1969, Ser. No. 794,874
Int. Cl. F16f *7/00, 15/30;* **F04h** *12/00*
U.S. Cl. 52—1 **3 Claims**

Separated parts of a flexible structure are maintained in a predetermined desired orientation with respect to each other against the action of distorting forces by applying to selected part or parts of the structure inertially developed torques (e.g. from flywheels) to main the selected part in its desired orientation with respect to a selected reference part of the structure.

3,579,930
SNOW DEFLECTOR UNIT
Herman G. Murphy, P. O. Box 446, Incline Village, Nev.
Filed July 17, 1969, Ser. No. 842,616
Int. Cl. E04d *13/10*
U.S. Cl. 52—24 **10 Claims**

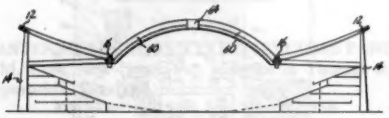
A sheet metal snow deflector unit comprising an apertured baseplate having a tapered column extending upwardly therefrom into a generally pyramidal shaped deflector secured to the baseplate. The deflector comprises a pair of substantially triangular sidewalls connected along a line which extends at a predetermined angle of inclination relative to the baseplate to define a cleavage edge for a mass of snow moving down an inclined roof to which the deflector unit is secured to protect a vent pipe projecting through the roof into the deflector. The front wall of the deflector comprises a wire mesh screen to permit exhaust to emanate from the vent pipe.

3,579,931
METHOD FOR POST-TENSIONING TENDONS
Frederic A. Lang, Landenberg, Pa., assignor to E. I. du Pont De Nemours and Company, Wilmington, Del.
Division of Ser. No. 712,796, Mar. 13, 1968, Pat. No. 3,513,609, Continuation-in-part of application Ser. No. 623,709, Mar. 16, 1967, now abandoned.
Int. Cl. E04c *3/29, 5/01*; E04g *21/12*
U.S. Cl. 52—741 5 Claims



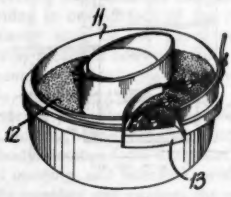
An anchoring system is provided wherein the end of a post-tensioned tendon extending from a concrete structure is encased in a metallic sheath and the sheath is crimped in a series of reversals of increasing angularity in the direction away from the concrete structure.

3,579,932
CABLE-SUSPENDED ROOF STRUCTURE
Ross T. Atkinson, Federal Way, Wash. (2nd & University Bldg., Suite 406, Seattle, Wash. 98101)
Filed Apr. 28, 1969, Ser. No. 819,821
Int. Cl. E04b *7/14*
U.S. Cl. 52—83 8 Claims



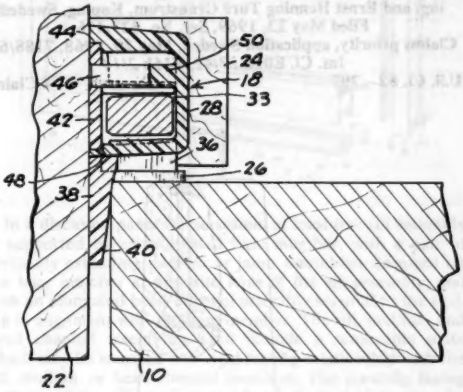
A cable-suspended roof structure is provided to span wide areas as, for example, stadiums, coliseums, arenas, playing fields and the like. More specifically, a roof is provided in which cables under tension extend between substantially centrally located tension ring means and a surrounding continuous or enclosed ringlike compression member, their ends being anchored securely therein and said cables being under tension. An upper and a lower double layer of cables is employed and compression spreader means spanned between each cable of either set and each of the proximate cables of the other set.

3,579,933
METHOD OF MANUFACTURING A CAM FOR USE IN AN IGNITION DISTRIBUTOR
John Snell, Welford-On-Avon, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Jan. 7, 1969, Ser. No. 789,504
Claims priority, application Great Britain, Jan. 8, 1968, 981/68
Int. Cl. B24b *1/00*
U.S. Cl. 51—315 1 Claim



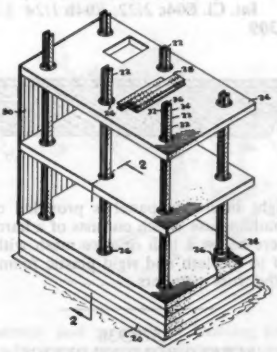
A cam for use in a distributor in a road vehicle is made by grinding the cam to the desired profile in the usual way, this operation leaving the cam surface with sharp edged asperities defining therebetween channels which in use store lubricant. The cam is then placed in a container with abrasive particles and the container is so moved that the particles collide with the cam surface and round off the sharp edges of the asperities without removing the asperities.

3,579,934
MAGNETIC DOOR CATCH WITH RISER
Raymond L. Pietsch, Flint, Mich., assignor to The Engineered Products Company, Flint, Mich.
Filed Sept. 17, 1969, Ser. No. 858,650
Int. Cl. E05c *19/16*
U.S. Cl. 49—394 9 Claims



A combined door catch and riser unit having a magnet and two exposed pole faces carried by a body having opposed flanges providing a mounting surface. A ramp with an inclined surface projects generally perpendicular to the pole faces and is carried by the body adjacent its mounting surface to raise a door when it engages the catch.

3,579,935
SYSTEM FOR ERECTING MULTISTOREY BUILDINGS
James L. Regan (409 Dunkel St., Fairbanks, Alaska, 99701), and David L. Garnhart, Hayward, Calif.
Filed June 14, 1968, Ser. No. 737,022
Int. Cl. E04b *1/35*
U.S. Cl. 52—126 25 Claims



A slab lifting jack assembly system associated with a vertical H-beam having a row of aligned vertical openings on each side of each flange of the beam with the jack assembly having an upper set of pins movable by hydraulic cylinder means into and out of engagement with the openings in the flanges

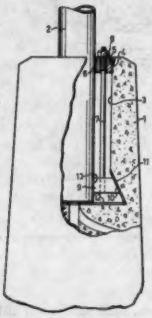
and a lower set of pins similarly movable with a main hydraulic cylinder connected between an upper frame supporting the upper pins and a lower frame supporting the lower pins with the upper frame also being connected to a concrete slab so that extension of the hydraulic cylinder serves to lift the slab when the upper pins are retracted out of engagement with the flange openings and the lower pins are extended to remain in the flange openings so that the slab is consequently lifted by extension of the frame cylinder and with control means including logic circuitry for detecting and preventing malfunctions of the system.

3,579,936

POLE BASE PROVIDING ADJUSTABILITY FOR ANGULAR AXIAL ALIGNMENT OF THE POLE

Gustav Mattias Andersson, Barnhemsgatan 10, 731 00 Koping, and Ernst Henning Ture Granstrom, Koping, Sweden

Filed May 23, 1969, Ser. No. 827,416
Claims priority, application Sweden, May 29, 1968, 7188/68
Int. Cl. E02d *27/42*; F16b *2/14*
U.S. Cl. 52—297 **4 Claims**



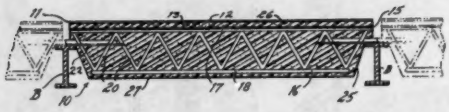
An arrangement for providing an angular adjustment of the vertical axis of a post relative to a foundation block in which the post is mounted includes an annular guiding retaining means, having a convex surface for making a line contact with the post, carried in an upper end of the foundation block together with a plurality of jaw means for effecting lateral adjustment of the lower end of the post within the foundation block.

3,579,937

FOAM PLASTIC PANEL WITHOUT TRUSS MEMBERS

Edward E. Lukens, 1427 Lane Ave., Bethlehem, Pa.

Filed May 29, 1969, Ser. No. 828,996
Int. Cl. E04c *2/22*; E04b *1/24*
U.S. Cl. 52—309 **5 Claims**



A lightweight insulating panel is provided of large area suitable for building use which consists of a hard top and immediately there-below a lath or wire mesh with truss members fastened to the lath and rigid plastic foam surrounding the lath and the truss members.

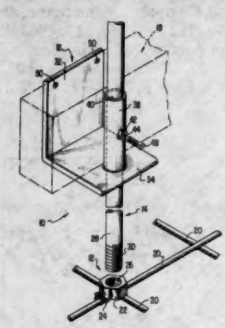
3,579,938

SCREED HOLDING DEVICE

Iner O. Hanson, P.O. Box 918, Whitefish, Mont.

Filed May 8, 1969, Ser. No. 823,119
Int. Cl. E04f *13/04*
U.S. Cl. 52—365 **4 Claims**

A device for supporting a screed at the proper elevation in a concrete form. The device has a convenient base which is attached to the lower surface of the form, and an upright support that is releasably engaged in the base. The upright



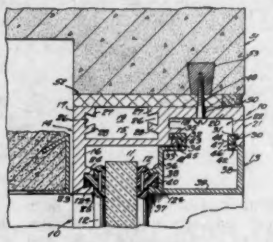
member has a bracket adjustably and releasably supported therealong to receive the screed member therein.

3,579,939

FRAME STRUCTURE FOR GLASS OR SOLID PANEL WALLS

Ellis V. Eichman, Irving, Tex. (790 Fruitdale Road, Brownsville, Tex. 78520)

Filed Oct. 17, 1969, Ser. No. 867,230
Int. Cl. E04b *2/88*
U.S. Cl. 52—397 **8 Claims**



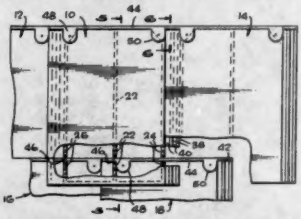
A frame structure for glass or solid wall panels providing for the arrangement of the glass or other type panels in a common plane an in such manner as to prevent lateral movement thereof due to vibrations caused by traffic movement, wind pressures, and other factors, minimizing the framing profile and the number of parts comprising the structure by providing a single frame element and panel retention means of unique design for fabricating all parts of a frame structure.

3,579,940

ROOFING TILE

James O. Greenleaf, Los Angeles, Calif., assignor to Stepan Chemical Company

Filed June 13, 1969, Ser. No. 833,107
Int. Cl. E04d *1/20*, *3/32*
U.S. Cl. 52—542 **6 Claims**



Plastic molded roofing tile arranged so that laterally positioned tiles overlap in a ridge and channel arrangement. An

upstanding flange at the top end of this overlap dams water flow against movement in that direction. Longitudinally related tiles are also overlapped with an upstanding flange at the upper end of the lower tile engaging in a transverse groove through reinforcing ribs in the bottom of the upper tile. Upstanding nailing bosses in the lower tile engage between the flanges to provide a locator stop to locate and rigidize the interrelationship. In one embodiment, the upstanding flange lockingly engages the downwardly directed ribs to prevent direct upward lifting of the upper tile.

3,579,941

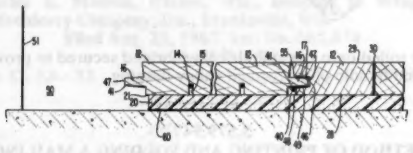
WOOD PARQUET BLOCK FLOORING UNIT

Howard C. Tibbals, P.O. Drawer A, Oneida, Tenn.

Filed Nov. 19, 1968, Ser. No. 777,070

Int. Cl. E04b *5/00;* **E04f** *15/04, 15/16*

U.S. Cl. 52—384 **6 Claims**



Wooden parquet block flooring incorporating cellular foam in multiple parquet block units having rubberlike flexible adhesive joining tongue and groove formations within the multiple block unit.

3,579,942

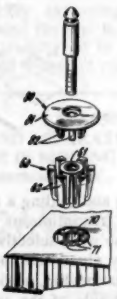
FASTENER ANCHORED IN HONEYCOMB PANEL

John M. Cole, New Hope, Pa., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Dec. 5, 1969, Ser. No. 882,568

Int. Cl. E04b *2/28;* **F16b** *13/08*

U.S. Cl. 52—615 **10 Claims**



A honeycomb fastener retainer includes the combination of a fastener receiving body member designed to be inserted through an opening in one surface of the panel and into a hollowed out cavity area of the panel core where it is retained in place by means of body attached, elongated, flexible finger elements which collapse in a limited manner to permit the body member to pass through the outer panel opening which spread out to a normal position beneath the panel surface in the area of the outer panel opening to permit removal of the body member from the panel. A cap member covers the panel opening, and interlocks with the finger element of the body member and engages the panel surface by suitable means to prevent rotation of the fastener retainer assembly upon its receiving a threaded fastener.

3,579,943

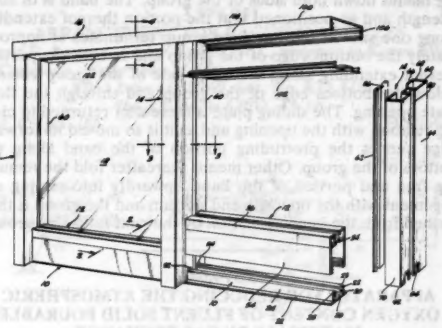
PANEL FRAME ASSEMBLY

Wayne C. Tam, Monterey Park, Calif. (752 La Portada, South Pasadena, Calif. 91030)

Filed May 28, 1969, Ser. No. 828,654

Int. Cl. E04c *2/38*

U.S. Cl. 52—656 **7 Claims**



In a disclosed panel frame system at least one sill assembly is supported by an elongated base member, with a pair of vertically extending mullion or jamb assemblies disposed on the base member at opposite ends of the sill assembly, and with an elongated head channel assembly secured to the ceiling in alignment with the base member. The sill, mullion, and head channel assemblies each include a removable plate which may be snapped into rigid mating relationship with the sill, mullion, or head channel members. The inwardly facing surfaces of the sill, mullion and head channel plates may be provided with a panel receiving recess. The lower extremity of a mullion member broad wall defines a pair of notches which snugly receive flanged sidewalls of the base member. A single base rail embodiment and a ledge sill embodiment of the frame system are also disclosed.

3,579,944

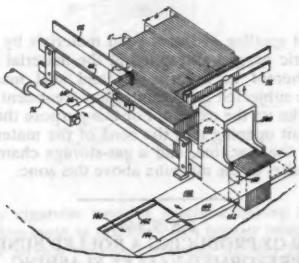
APPARATUS AND METHOD FOR BANDING GROUPS OF ENVELOPES

Vincent E. Heywood, Worcester; Donald H. Bushey, Shrewsbury, and William A. Chapman, Jr., Hubbardston, Mass., assignors to United States Envelope Company, Springfield, Mass.

Division of Ser. No. 502,759, Oct. 18, 1965, Patn. No. 3,399,788, Continuation-in-part of application Ser. No. 326,024, Nov. 26, 1963, now abandoned.

Int. Cl. B65b *27/08, 57/14;* **B65h** *33/08*

U.S. Cl. 53—3 **7 Claims**



In an apparatus and method for banding envelopes, envelopes first advance in succession from an envelope making machine toward a banding station by moving perpendicular to their faces while supported on their edges in face to back relation. Immediately prior to reaching the banding station the forwardmost group is segregated from the advancing succession by a laterally movable pusher which shifts the group endwise to the banding station where it is temporarily sup-

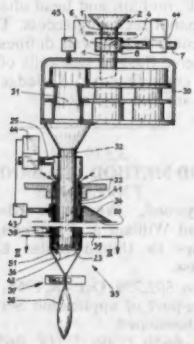
ported between spaced side fingers. At the banding station is an opening in the floor plate which extends across the width of the envelope group and which is straddled by the length of the group. A sliding plate covers the opening during the movement of the envelope group to the banding station. After the envelope group is properly positioned at the banding station the sliding plate is withdrawn and a band placed across the top of the group is pressed by two vertically moving blades down both sides of the group. The band is of such a length and so positioned that the portion thereof extending along one side of the envelope group terminates at approximately the bottom edge of the group and so that the portion thereof extending along the other side of the group extends below the bottom edge of the group and through the floor plate opening. The sliding plate is thereafter returned to closing relation with the opening and as it is so moved its forward edge carries the protruding portion of the band along the bottom of the group. Other means thereafter fold the remaining free end portion of the band upwardly into sealing engagement with the opposite end portion and the group is then pushed from the banding station by the next following group.

3,579,945

APPARATUS FOR REDUCING THE ATMOSPHERIC OXYGEN CONTENT OF FLUENT SOLID POURABLE MATERIALS BY GAS EXCHANGE

Norbert Buchner, Beutelsbach, Wurttemberg, and Klaus Domke, Stuttgart-Weilimdorf, Germany, assignors to Fr. Hesser Maschienfabrik Aktiengesellschaft, Stuttgart-Bad Cannstatt, Germany

Filed Aug. 8, 1969, Ser. No. 848,479
Claims priority, application Germany, Aug. 22, 1968, P 17 86 137.9
Int. Cl. B65b *31/04*
U.S. Cl. 53—112 **11 Claims**



To prevent spoiling of fluent solid materials by the action of atmospheric oxygen entrapped in the material during the packaging thereof in a form, fill and seal machine, the materials are subjected to a counterflow treatment with a gas which will take up the oxygen. For this purpose there is a gas supply conduit opening into the zone of the materials in the feed pipe of the machine, and a gas-storage chamber in the forming mandrel of the machine above this zone.

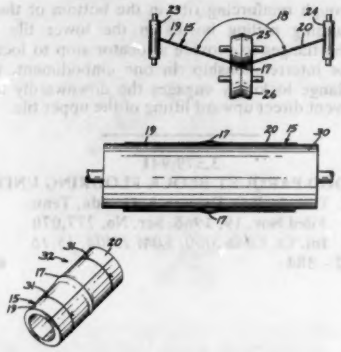
3,579,946

METHOD OF PRODUCING A ROLLED BUNDLE OF PREFORMED VALLEY FLASHING

Robert S. Graving, Rte.4 Box 432, Osseo, Minn.

Filed Oct. 1, 1969, Ser. No. 862,898
Int. Cl. B65b *63/04*, *61/02*, *13/02*
U.S. Cl. 53—21FW **5 Claims**

A method of producing seamless rolled valley flashing by creasing an elongated relatively narrow length of flexible sheet material along its length to provide a cross-sectionally relatively shallow V-shaped form having an obtuse included angle. The creased sheet material is positioned on a cylindrical arbor with the obtuse included angle disposed to face radially toward the arbor and by increasing the included



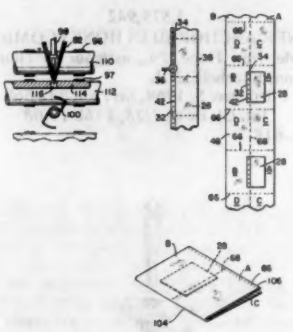
angle rolled onto the cylindrical arbor and secured to provide a rolled bundle of preformed valley flashing.

3,579,947

METHOD OF PRINTING AND FOLDING A MAILING PIECE

Mario Kalman, Philadelphia, Pa., assignor to Goodway Inc., Philadelphia, Pa.

Filed Apr. 7, 1969, Ser. No. 813,892
Int. Cl. B65b *63/04*; B31b *1/16*, *1/72*
U.S. Cl. 53—23 **5 Claims**



The method of printing and folding a mailing piece including the steps of running a continuous paper web, printing desired information on the web, selectively feeding insertion envelopes with previously glued tabs onto said web at one side thereof in spaced relationship, adding an axially aligned strip of glue to the other side of the said web, transversely perforating the said web intermediate the said affixed envelopes, transversely cutting the said web immediately adjacent the said perforation, rotating the said cut web portions to a folder utilizing the said perforations, transporting the said cut and folded web sections to a final folder and trimming the edges to thereby provide a finished mailing piece having a glued tab envelope inserted therein.

3,579,948

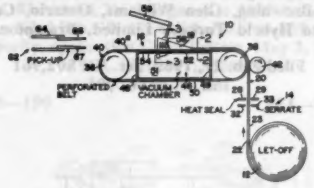
BAG HANDLING APPARATUS AND METHOD

Bernard Lerner, Hudson, Ohio, assignor to Automated Packaging Corporation, Bedford Heights, Ohio

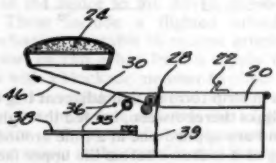
Filed Apr. 29, 1968, Ser. No. 731,672
Int. Cl. B65b *43/04*, *43/30*, *43/36*
U.S. Cl. 53—29 **13 Claims**

A chain of bags in part carried by a gas-permeable mova-

ble belt is held in place against the belt by a vacuum while the belt is advanced and a flow of gas expands a bag for loading. Marginal edges of the bag chain may be isolated from the vacuum to facilitate bag expansion.

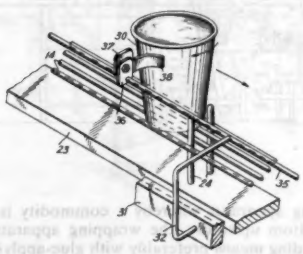


3,579,949
WRAPPING METHOD AND APPARATUS
Charles E. Michels, Racine, Wis., assignor to Wrapping Machinery Company, Inc., Franksville, Wis.
Filed Aug. 23, 1967, Ser. No. 662,674
Int. Cl. B65b *67/08*
U.S. Cl. 53—33 **17 Claims**



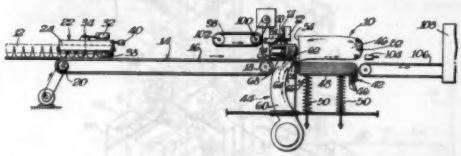
Disclosed herein is a wrapping method and apparatus in which an article is positioned on a table at one side of a film web withdrawal port. At the other side of the port there is a hot-wire web-severing tool and a package rest or support in the form of a narrow, open-ended, outwardly projecting arm. A length of film web is drawn through the port upwardly and forwardly about the article to partially wrap it. The partially wrapped article is then drawn toward the operator to sweep it past the hot wire to cut the web. The article is deposited on the arm, and laterally extending film wings are folded downwardly and around the arm to the undersurface thereof. The article is then transferred to a sealing surface against which the underfolded wings are sealed.

3,579,950
METHOD OF AND APPARATUS FOR OBVIATING SPILLAGE IN MOVING CONTAINERS
Glenn V. Davis, Watertown, N.Y., assignor to Borden, Inc., New York, N.Y.
Filed Jan. 3, 1969, Ser. No. 788,753
Int. Cl. B65b *3/04, 7/28*
U.S. Cl. 53—37 **4 Claims**



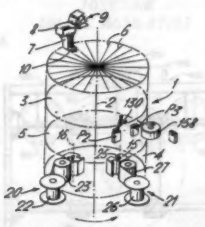
The present invention relates to a high-speed conveyor-type canning machine comprising means for supplying containers, means for affixing closures on a filled container, comestible depositing means interposed between said supplying means and said affixing means, means for continuously advancing said containers to said depositing means and said affixing means, and means for intercepting and rotating said container prior to positioning same beneath said closure affixing means whereby a vortex is induced in said comestible to prevent overflow.

3,579,951
ARRANGEMENT FOR BAGGING ARTICLES
Louie R. Lowery, Cedar Knools, N.J., assignor to Keyes Fibre Company, Waterville, Maine
Filed June 16, 1969, Ser. No. 833,410
Int. Cl. B65b *57/02, 43/36*
U.S. Cl. 53—55 **11 Claims**



Arrangement for bagging articles comprises frame with conveyor on frame for propelling articles along longitudinal path of travel. Supply of flexible bags is adjacent longitudinal path of article travel, and each bag of supply has closed and open ends with portion adjacent open end thereof secured to bag retainer on frame. Bags are singly inflated open into article-receiving position in longitudinal path of article travel so that closed end of each inflated bag is downstream of opened end thereof. Conveyor propels each article into inflated opened bag so that momentum of propelled article tears associated bag away from bag retainer which enables next bag of supply to be inflated into article-receiving position for next article on conveyor.

3,579,952
PACKING MACHINES
Robert William Davies; Charles Thomas Hall; Dennis Hinchcliffe; Alan Keith McCombie, London, England, and Derek Henry Youngman, Maitland, Cape Province, South Africa, assignors to Molins Machines Company Limited, London, England
Filed Oct. 24, 1966, Ser. No. 590,153
Claims priority, application Great Britain, Nov. 1, 1965, 46143/65
Int. Cl. B65b *19/04, 19/12, 43/10*
U.S. Cl. 53—37 **63 Claims**



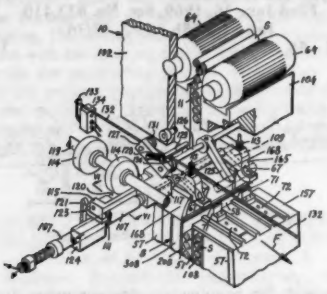
A rotary cigarette packing machine having three layers, namely: a top layer in the form of a hopper which receives a continuous stream of cigarettes and divides them up into bundles; a bottom layer which forms open-ended packets from webs of packet material; and a middle layer which pushes the bundles into the packets, closes them and delivers them in one continuous stream. The machine rotates continuously about a vertical axis past a continuous supply of cigarettes and a continuous supply of each of the packet materials and comprises a number of sets of mechanisms, considered vertically, each of which will perform the complete packing operation so that that operation is being performed a number of times simultaneously.

3,579,953

CIGARETTE PACKERS

Goffredo Gianese, Bologna, Italy, assignor to AMF Incorporated

Continuation-in-part of application Ser. No. 734,371, June 4, 1968, now Patent No. 3,531,911, and a continuation-in-part of 734,372, June 4, 1968, now Patent No. 3,553,925. Filed May 27, 1969, Ser. No. 828,197
Int. Cl. B65b *19/04*
U.S. Cl. 53—59 10 Claims



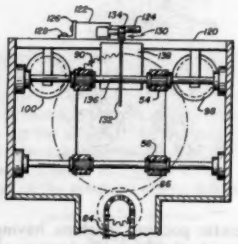
A packaging machine comprising an endless conveyor having a plurality of successive containers for receiving rodlike articles, such as cigarettes, including means for feeding a predetermined number of rodlike articles to the container from the feeder as the conveyor moves. Particularly, the feeding means comprise a vertical channel in which a plurality of superimposed cigarettes are maintained, said channel being provided with an oscillating support at its bottom which is actuated in synchronism with the passage of the containers to lower and permit the cigarettes to fall into the container.

3,579,954

CARTON-SEALING APPARATUS WITH ROTATION CONTROL

Tex Bates, Union City, Calif., assignor to The Finn Industries, Inc., Chicago, Ill.

Filed Aug. 21, 1969, Ser. No. 851,844
Int. Cl. B65b *57/00, 7/20*
U.S. Cl. 53—76 7 Claims



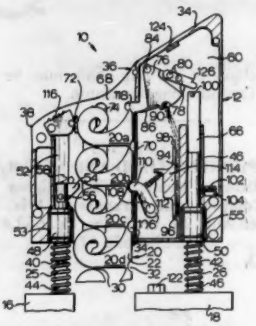
An improved means in a carton-sealing apparatus for actuating rotation of a turn box which turns a vertically received carton to a horizontal position by a 90° turn. An elongated switch of the actuating mechanism is contacted by a carton only after it has turned to the horizontal position, and a stop member checks the advance of a following carton in the vertical position in the turn box to prevent jamming.

3,579,955

APPLICATOR FOR BAG CLOSURES

John Christie Gunyou, Toronto, Ontario, and Stanley Albert Charles Browning, Glen Williams, Ontario, Canada, assignors to Hybrid Turkeys Limited, Brampton, Ontario, Canada

Filed Feb. 27, 1969, Ser. No. 802,961
Int. Cl. B65b *7/06*
U.S. Cl. 53—138 8 Claims



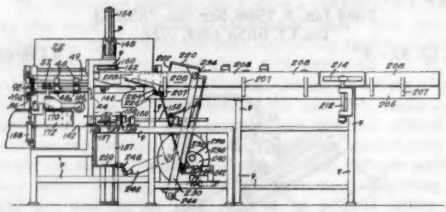
Bag closures in strip form so that adjacent bag closures are joined by two links therebetween, are fed through an applicator seriatim, and are applied one at a time around a gathered neck of the bag as it is drawn across the upper face of the applicator. The applicator has a restricting motion relative to its support; means are provided to restrict movements of the strip of bag closures as the body of the applicator moves downwards; other means are provided to cut one of the links between the leading and next adjacent bag closure in the strip in the applicator as near its lower limit of motion; and other means are provided to secure the bag closures within the applicator as it moves upwards, thereby advancing the strip of bag closures through the applicator seriatim.

3,579,956

PACKAGING APPARATUS

Wolfgang Hoffmann, Beaconsfield, Quebec, and Paul Wick, Valois, Quebec, Canada, assignors to Canadian International Paper Company, Montreal, Quebec, Canada

Filed June 3, 1968, Ser. No. 734,029
Int. Cl. B65b *35/50*
U.S. Cl. 53—159 10 Claims



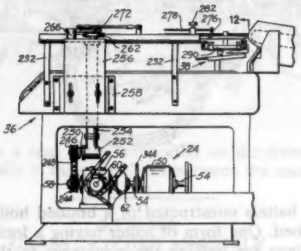
A wrapping apparatus whereby a commodity is wrapped from the bottom upwardly, the wrapping apparatus having wrapping-feeding means preferably with glue-applying means for placing glue on selected portions of the wrapper as the wrapper is fed. The commodity-feeding component for placing the commodities on the wrapper is either a one or two level device for placing single or double layers of commodities on the wrapper.

3,579,957

BAGGING APPARATUS

James Claiborne Mills, Jr., Chesterfield County, and Gordon W. Hays, Richmond, Va., assignors to AMF Incorporated

Filed Feb. 19, 1968, Ser. No. 706,435
Claims priority, application Great Britain, May 3, 1967, June 7, 1967, 10201/67;26296/67
Int. Cl. B65b 5/04
U.S. Cl. 53—190 10 Claims



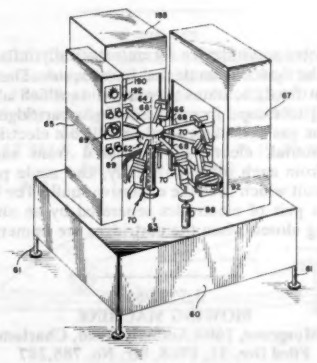
A bagging apparatus comprising a frame, an electric drive motor mounted thereon and a power train for transmitting the power of the motor to the driven members hereinafter described. These include a flighted infeed conveyor, a bagging mechanism operable to receive articles from the infeed conveyor, pickup a bag from a supply thereof, and in conjunction with a blockade member to effect relative movement between the article supported therein and the bag to pull the bag over the article and strip the bagged article from the mechanism, a drop transfer mechanism for temporarily supporting an article at the transfer area between the forward end of the infeed conveyor and the bagging mechanism, and an elevator mechanism for receiving bagged articles stripped from the scoop-tray mechanism and transporting them to an outfeed conveyor.

3,579,958

MACHINE FOR FORMING, FILLING, AND SEALING CONTAINERS

Ronald L. Hentges, Minneapolis, and Howard R. Garrett, St. Paul, Minn., assignors to Haskon Incorporated, Warsaw, Ind.

Filed Aug. 15, 1969, Ser. No. 850,417
Int. Cl. B65b 7/18, 43/28
U.S. Cl. 53—183 17 Claims



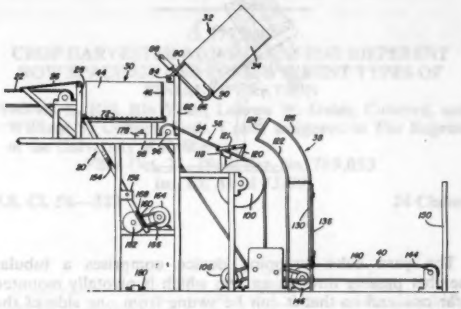
A machine for automatically forming, filling, and sealing tubular container blanks that continuously holds the container blanks in an open and upright position from their external vertical sides and feeds them in sequence to the machine's forming, filling, and sealing operations.

3,579,959

AUTOMATIC GROCERY BAG FILLING APPARATUS WITH INNER AND OUTER TRAY

Gaspar Robert Bossetta, Rte. 1, Box 297, Lacombe, La.

Continuation-in-part of application Ser. No. 664,195, Aug. 29, 1967, now abandoned. Filed Aug. 27, 1968, Ser. No. 766,661
Int. Cl. B65b 5/06, 39/00, 67/02
U.S. Cl. 53—260 15 Claims



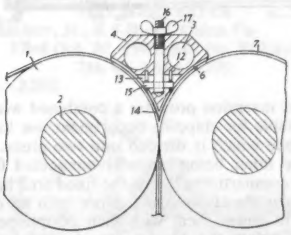
An apparatus for automatically filling grocery bags with items purchased by a customer in a supermarket or the like including a tray in which the items are placed as they are registered on the checkout cash register, a bag holder on which an opened grocery bag is placed with the bag holder being movable into a position for telescopically receiving the tray while, the items are discharged from the tray into the grocery bag together with a conveyor structure for removing the grocery bag from the grocery bag holder and storing in an accessible position. In one embodiment of the invention, the tray is supported within a drawer structure which is actuated by a mechanism to first elevate the drawer into an inclined position in aligned relation to the grocery bag bag and then inserting the tray from the drawer into the grocery bag, releasing the items into the bag and then retracting the tray and returning the tray and drawer to its normal position for placing subsequent items in the tray.

3,579,960

POWDER-ENCAPSULATION MACHINE

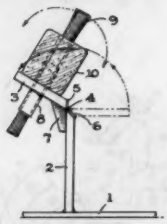
Maharaj Krishen Mehta, Lakeside, Cardiff, Wales, assignor to P. Leiner & Sons (Encapsulations) Limited, Treforest, Glamorganshire, Wales

Filed Mar. 10, 1969, Ser. No. 805,687
Claims priority, application Great Britain, June 26, 1968, 30567/68
Int. Cl. B65b 47/02
U.S. Cl. 53—184 5 Claims



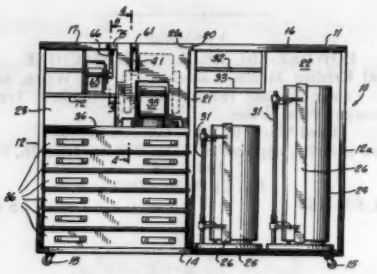
Apparatus for forming filled gelatine capsules having two pocketed die rolls and a heater block supported between the die rolls to heat the gelatine ribbons as they approach the nip of the rolls, the side faces of the heater block being spaced from the ribbons to heat them by radiation. A tip member for heating the ribbons by direct contact immediately before their passage through the nip can be freely suspended from the heater block.

3,579,961
CAKE WRAPPING DEVICE
Hans J. Dessauer, Childersburg, Ala.
Filed Apr. 10, 1969, Ser. No. 815,011
Int. Cl. B65b 67/08, 11/00
U.S. Cl. 53—390 5 Claims



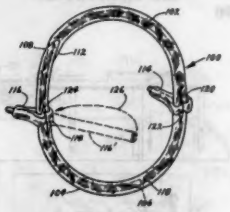
The yarn cake wrapping device comprises a tubular member passing through an arm which is pivotally mounted near one end so that it can be swung from one side of the mount to the other. A rigid tubular cake wrapper is placed in the tubular member and a cake of yarn is disposed about the tubular member and wrapper while the arm is in the load position. The upper end of the wrapper is drawn down about the cake and the arm is swung to a horizontal position on the other side of the mount to discharge the cake. The free end of the wrapper is then drawn over the second end of the cake.

3,579,962
COMBINED WRAPPING AND TAPING WORK TABLE
Frank P. Mitten, 182 W. 55th St., New York, N.Y.
Filed Sept. 10, 1969, Ser. No. 856,755
Int. Cl. B65b 67/10
U.S. Cl. 53—390 8 Claims



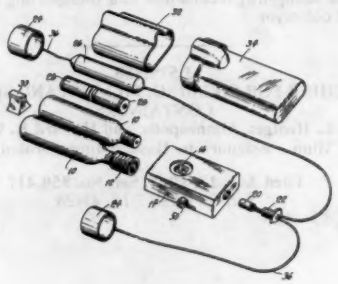
The present invention provides a combined wrapping and taping work table for shipping department use having a flat working surface which is divided into two areas, one being fixed and the other being hingedly connected for upward movement, a compartment below the fixed area having vertically disposed rolls of wrapping paper with spring-pressed tearing bars in engagement with their peripheries, and the compartment below the hinged area having two gummed tape delivery and moistening machines, and a labeling device, one of said gummed tape delivery and moistening machines having a hinged crank arm extension or handle which lies horizontally below said hinged work table surface when at rest, an enlarged opening in said work table above said hinged crank arm connecting to a forwardly directed slot, said hinged crank arm being manually engageable through said enlarged opening and movable along said slot to deliver a preselected amount of moistened tape.

3,579,963
ANIMAL HALTERS
Colonel Henry, Lawton, Iowa
Filed July 11, 1969, Ser. No. 841,052
Int. Cl. B68b 01/02
U.S. Cl. 54—24 3 Claims



Animal halters constructed of a braided hollow-core line are described. One form of halter having a locking piece in the nosepiece for locking the sidepieces to the nosepiece without requiring hardware clamps is described. Other halter embodiments interwoven from segments of braided hollow-core line, are also described.

3,579,964
SQUIB-POWERED AUTOMATIC INFLATION DEVICE
Paul E. Ohlstein, Smithtown, N.Y., assignor to the United States of America as represented by the Secretary of the Navy
Filed July 1, 1969, Ser. No. 838,164
Int. Cl. B67b 7/24
U.S. Cl. 222—5 1 Claim

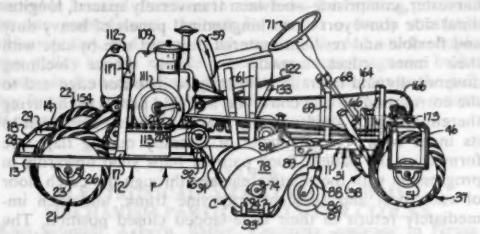


An explosive squib device for automatically inflating a life vest when the device is immersed in sea water. The explosive squib, when fired, actuates piercing pins which allow pressurized CO_2 to escape from a pair of gas cartridges into the life vest. The gas cartridges are formed from electrically conductive material, electrically insulated from each other, separated from each other physically, and made part of the electric circuit which fires the explosive squib. The cartridges thus form a pair of electrodes separated by an air gap, the circuit being closed when the cartridges are immersed in sea water.

3,579,965
MOWING MACHINE
Johnnie J. Musgrove, 1604 Amberly Road, Charleston, S.C.
Filed Dec. 31, 1968, Ser. No. 788,287
Int. Cl. A01d 75/30
U.S. Cl. 56—7 9 Claims

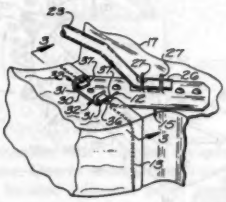
A four-wheel drive mowing machine including a frame having pairs of driven front and rear wheels provided with tires, the width of the tires being substantially greater than the width of the sidewalls. The front wheels are mounted on opposite ends of an axle mounted on the frame for pivotal movement in a substantially vertical plane about the frame

cental axis and a pair of laterally extending front cutters are supported on the frame on opposite sides of the central axis



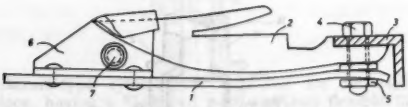
together with a rear cutter supported on the frame and arranged centrally of the central axis between the rear wheels.

3,579,966
GRASS CATCHER ASSEMBLY
Stanley F. Allina, Ladue, Mo., assignor to The Perfection Manufacturing Company, St. Louis, Mo.
Filed Oct. 4, 1968, Ser. No. 765,080
Int. Cl. A01d *35/22*
U.S. Cl. 56—202 **8 Claims**



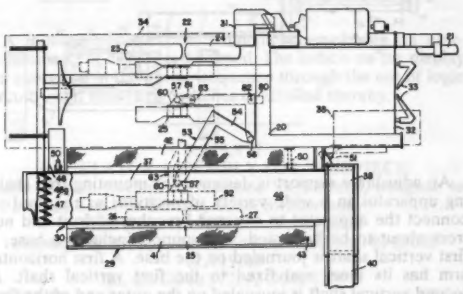
The grass catcher assembly includes a catcher bag having an open end and a closed end, the closed end being supported from the lawn mower by a cantilever support arm. The mouth of the catcher bag includes a split hoop wire frame stitched within the hem, the split frame includes opposed hook portions at each end. An adapter plate attached to the lawn mower housing above the discharge orifice includes engagement means in the form of a pair of spaced lugs. The split wire frame is sprung into interlocking engagement with the spaced lugs to hold the open end of the bag in overlapping relation with the discharge orifice.

3,579,967
GRAIN-LIFTER FOR GRAIN-CUTTING ASSEMBLIES
Gustav Schumacher, Eichelhardt, Haus Nr. 51, Germany
Filed Sept. 16, 1969, Ser. No. 858,479
Claims priority, application Germany, Sept. 18, 1968, Sept. 18, 1968, Aug. 12, 1969,
P 17 82 561.5, P 17 82 562.6 and P 19 40 955.3
Int. Cl. A01d *55/13*
U.S. Cl. 56—313 **8 Claims**



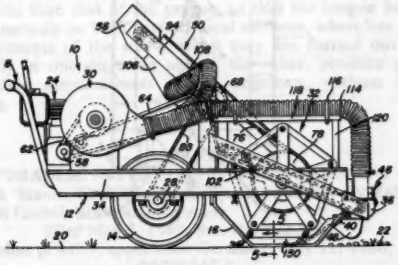
A grain lifter for a grain-cutting assembly of the type used, for example, in a harvester thresher and grain binder. A holder is engaged by a finger which is fastened thereto by a bolt and nut. This nut is formed with an annular groove, and a grain lifter has a springy supporting arm formed at its rear end with a notch which receives the part of the nut which is surrounded by the groove thereof with portions of the supporting arm on opposite sides of the notch thereof being received in said groove. This springy supporting arm of the grain lifter has a hook unit fixed thereto, and this hook unit extends around the finger and is pressed against the same by the springy action of the supporting arm when the rear end thereof is in the groove of the finger-fixing nut. The hook unit carries a blocking device which prevents automatic removal or unhooking of the hooking unit from the finger as a result, for example, of up-and-down movement of the springy supporting arm due to engagement of ground irregularities.

3,579,968
CROP HARVESTER ADJUSTABLE FOR DIFFERENT ROW SPACINGS AND FOR DIFFERENT TYPES OF FINIAL OPERATION
Fredrick L. Hill, Rio Vista; Lauren W. Gates, Concord, and William V. Colbert, Lodi, Calif., assignors to The Regents of the University of California
Filed Oct. 21, 1968, Ser. No. 769,053
Int. Cl. A01d *45/00*
U.S. Cl. 56—327 **24 Claims**



A crop harvester with a basic unit comprising a wheel-supported main frame, crop-pickup means, separating means for detaching the crop from the bearing plants, a collecting conveyor for receiving the detached crop and moving it rearwardly, and a cross conveyor at the rear for moving the collected crop to one side of the harvester. To this basic frame are attached, removably and one at a time, (1) a direct-loading conveyor, (2) a manual sorting unit, and (3) a mechanical sorting unit. Pivotal attachment enables folding whichever attachment is mounted on the basic unit. The basic unit also has means for varying the distance between one rear wheel unit and another between a minimum said distance and a maximum said distance, to accommodate different row spacings and to enable support of the sorting units when they are attached.

3,579,969
NUT HARVESTER
Eugene P. Richter, Jr., R.F.D. #2, Cairo, Ga.
Filed Oct. 30, 1969, Ser. No. 872,642
Int. Cl. A01d *51/00*
U.S. Cl. 56—328R **10 Claims**



Nuts lying on the ground are engaged by chain sections depending from a rotating reel so as to be dragged over a

screen flap into a collection trough during forward movement of a mobile harvester frame on which the reel, flap and trough are mounted. The nuts are conveyed laterally through the trough to a delivery conveyor while being aerated.

3,579,970

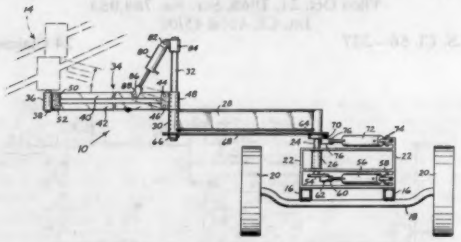
ADJUSTABLE SUPPORT FOR TREE SHAKING APPARATUS

Edward I. Gilbert, deceased, late of Dallas; Edith M. Graff, Administratrix, Dallas, and William A. Rogers, Portland, Oreg. Said Edith M. Graff, administratrix assignor to Edith M. Graff

Continuation of application Ser. No. 641,951, May 29, 1967, now abandoned. Filed July 10, 1969, Ser. No. 871,763

Int. Cl. A01g *19/00*

U.S. Cl. 56—328 **9 Claims**



An adjustable support is designed for mounting tree shaking apparatus in a wide variety of positions as required to connect the apparatus to selected branches of fruit and nut trees about to be harvested. The support includes a base; a first vertical shaft is journaled on the base. A first horizontal arm has its inner end fixed to the first vertical shaft. A second vertical shaft is journaled on the outer end of the first horizontal arm. A second horizontal arm is keyed to the second vertical shaft. Mounting means on the outer end of the second horizontal arm mount the shaking apparatus. Drive means are provided for driving the arms independently of each other, as required to place the shaking unit in positions where it can reach the tree branches to which it is to be attached.

3,579,971

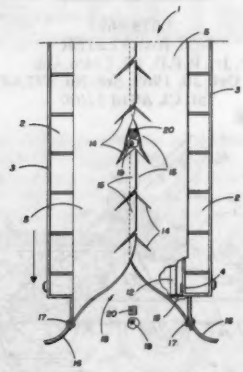
CATCH FLOOR FOR GRAPE HARVESTERS

Jean Sagouspe, and Eugene D. Riley, Los Banos, Calif., assignors to Genie Grape Harvester, Inc., Los Banos, Calif.

Filed Feb. 5, 1970, Ser. No. 8,944

Int. Cl. A01g *19/00*

U.S. Cl. 56—330 **10 Claims**



A longitudinal, transversely centrally peaked, detached-grape catch floor for a grape harvester of the type which straddles and moves along a row of grapevines growing on wires supported by posts; the catch floor, which is fashioned to permit the unobstructed relative passage therethrough of the posts and adjacent grapevine trunks with advance of the harvester, comprising—between transversely spaced, longitudinal side conveyors—two longitudinal panels of heavy-duty and flexible and resilient material disposed side-by-side with their inner edges lapped, and each thence inclining downwardly and laterally outwardly to its outer edge and to the corresponding side conveyor, and said panels each having therein a row of longitudinally spaced diagonal slits open to its inner edge whereby pairs of laterally mating flaps are formed on the panels. Such pairs of flaps yield upwardly in progression with the relative passage through the catch floor of each post and adjacent grapevine trunk, and then immediately return to their edge-lapped closed position. The panels are spring-finger supported from below, clear of the flaps, and out of the path through the catch floor of said posts and grapevine trunks.

3,579,972

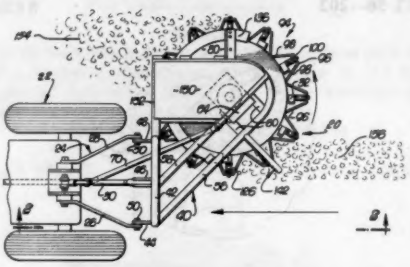
AGRICULTURAL IMPLEMENT

Levi L. Sears, Oxnard, and Richard N. Sommer, Pacoima, Calif., assignors to SSP Industries, Burbank, Calif.

Filed Apr. 18, 1969, Ser. No. 817,538

Int. Cl. A01d *79/00*

U.S. Cl. 56—370 **4 Claims**



An agricultural implement to be moved by a powered vehicle for collecting brush and cuttings and the like, into a single windrow. The implement includes a plurality of spring-steel tines arranged on a power-actuated revolving annular support, and cam means associated with said tines to move them from a vertical raking position to a discharging position.

Further, a fender may be utilized for specific raking and discharging operations when the trees involved are citrus, to enable the implement to function under the tree skirts.

3,579,973

STOP MECHANISM FOR ROTARY TEXTILE SPINDLE

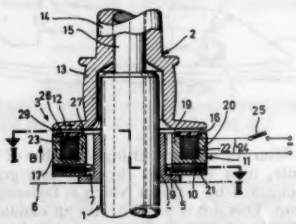
Gustav Fetzer, Gingen, and Gerhard Freytag, Faurndau, both of, Germany, assignors to Zinser-Textilmaschinen Gesellschaft Mit Beschrankter, Haftung, Ebersbach, Germany

Filed Feb. 25, 1969, Ser. No. 801,993

Claims priority, application Germany, Feb. 29, 1968, Feb. 1, 1969, P 17 10 059.3 and P 19 05 063.6

Int. Cl. D01h *7/22*

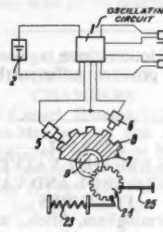
U.S. Cl. 57—88 **16 Claims**



A rotary textile spindle is stopped by an electromagnetic brake means producing magnetic fields passing through the

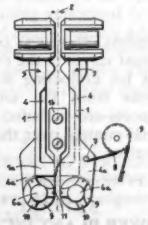
spindle and raising the brake means to a higher braking position, when energized. The brake means is nonrotatably mounted on the stationary support of the spindle, and is movable in axial direction to and from the braking position. In one embodiment, the spindle carries a freely rotatable driven pulley, and coupling means are provided which couple the pulley to the spindle when the electromagnetic brake means is deenergized and inoperative, and disengage the pulley from the spindle when the electromagnetic brake means is energized and brakes the spindle to a stop.

3,579,974
ELECTRONICALLY-CONTROLLED DRIVE MECHANISM PARTICULARLY FOR CLOCKS
Karl Schmidt, Achern, Baden, Germany, assignor to Firma GEHAP Gesellschaft fuer Handel und Patentverwertung mbH& Co. KG.,, Achern, Baden, Germany
Filed Apr. 8, 1968, Ser. No. 719,782
Claims priority, application Germany, Apr. 8, 1967, F33765
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 **13 Claims**



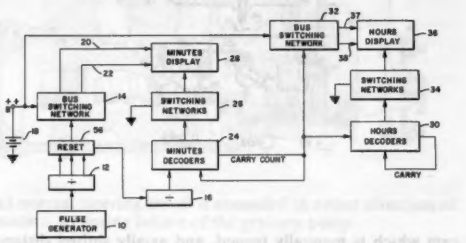
A drive mechanism for clocks includes a stabilized transistor oscillator. One or more drive coils within the oscillator circuit are located adjacent poles provided about the circumference of a rotor wheel mounted on the same shaft as a drive pinion. The magnetic interaction between the drive coils and the poles causes a rotation of the wheel.

3,579,975
FLEXURE-TYPE SYMMETRICAL OSCILLATOR
Rene Besson, and Remy Chopard, Neuchatel, Switzerland, assignors to Ebauches S.A.
Filed Aug. 25, 1969, Ser. No. 852,811
Claims priority, application Switzerland, Aug. 30, 1968, 13,112/68
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 **2 Claims**



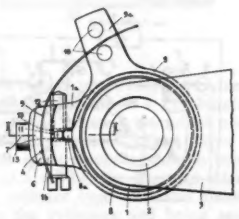
A flexure-type symmetrical oscillator for an electric timepiece, having a U-shaped part with two flexible limbs connected at their free ends to two rigid arms which in turn have counterbalancing masses at their free ends and drive transducers at the location where they are connected to the flexible limbs, the dimensioning of the arms and limbs being such that the instantaneous center of rotation thereof is substantially coincident with the center of gravity during flexure, whereby the frequency of the oscillator is substantially independent of changes of position and orientation of the oscillator with respect to gravity, means being provided which permits adjustment of the frequency of the oscillations of such an oscillator, like the regulator assembly of a conventional watch with balance-wheel and balance-spring, in view of the adjustments of the running of the watch.

3,579,976
ELECTRONIC TIMEPIECE
Thomas F. D'Muhala, Exeter Road, Lebanon, Conn.
Filed Nov. 21, 1969, Ser. No. 878,663
Int. Cl. G04b *19/32*
U.S. Cl. 58—50 **6 Claims**



A miniaturized electronic timepiece employing an electroluminescent display is disclosed. The indicia on the display are energized in the proper sequence through the use of logic circuitry and electronic switches controlled thereby.

3,579,977
REGULATOR-ASSEMBLY FOR TIMEPIECE
Andre Meylan-Rochat, Le Brassus, Switzerland, assignor to Parechoc S. A., Le Sentier, Vaud, Switzerland
Filed Aug. 4, 1969, Ser. No. 847,117
Claims priority, application Switzerland, Aug. 9, 1968, 12,019/68
Int. Cl. G04b *17/14;* **G04c** *7/00*
U.S. Cl. 58—112 **1 Claim**

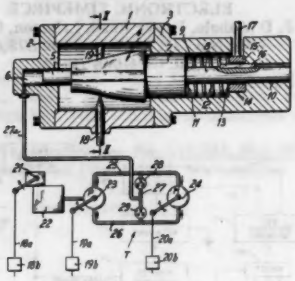


A regulator-assembly for a timepiece in which the regulator has a catch engaged in the groove of a tangential screw threaded in the frame of the clockwork in such a way that the angular position of the regulator is modified by rotating the screw, characterized by the fact that the catch is constituted by a thin elastic tongue urged, by its own elasticity, to apply itself against the bottom of the groove, the two terminal faces of the groove being frustoconical and opening towards the outside, the width of the bottom of the groove being less than that of the tongue, so that the tongue bears simultaneously on both frustoconical surfaces, wherefore the displacements of the screw, when they are carried out alternately in one direction and in the other, produce corresponding displacements of the regulator, without idle running.

3,579,978
HYDRAULIC DRIVE CONTROL ARRANGEMENT
Dietrich Stams, Sindelfingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed May 7, 1969, Ser. No. 822,381
Claims priority, application Germany, May 11, 1968, P1750545.2
Int. Cl. F02b *41/00*
U.S. Cl. 60—19 **12 Claims**

A drive for a car or machine comprises a combustion engine driving a hydrostatic pump-motor transmission. The fuel

supply of the combustion engine, the discharge volume of the pump, and the acceptance volume of the hydraulic motor are simultaneously adjusted by three cam followers under the control of three three-dimensional cam faces of a control

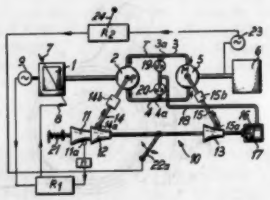


cam which is manually turned, and axially shifted distances depending on the hydraulic pressure in the hydrostatic transmission so that maximum efficiency and performance are obtained.

3,579,979
REGULATED HYDRAULIC DRIVE CONTROL APPARATUS

Paul Bosch, Ludwigsburg, and Walter Kobald, Stuttgart-Feuerbach, both of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed June 4, 1969, Ser. No. 830,324
Claims priority, application Germany, June 5, 1968, P 17 51 471.5
Int. Cl. F15b *15/18*
U.S. Cl. 60—19 **12 Claims**



A hydraulic drive includes a prime mover and a hydraulic pump-motor transmission which are respectively adjusted to correlated desirable operational conditions by three three-dimensional cam surfaces of a control cam. A speed regulator means compares a desired output speed with the actual output speed of the prime mover and preferably also of the hydraulic motor, and adjusts the drive accordingly.

3,579,980
UNIFLOW STIRLING ENGINE AND FRICTIONAL HEATING SYSTEM

Donald A. Kelly, 58-06 69th Place, Maspeth, N.Y.

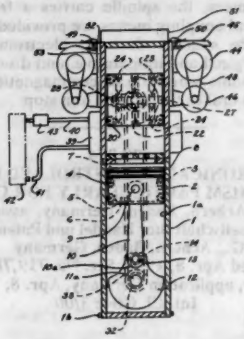
Filed Nov. 10, 1969, Ser. No. 875,252
Int. Cl. F03g *7/06*
U.S. Cl. 60—24 **8 Claims**

The Uniflow Sterling engine consists of multiple power and displacer sections which are arranged in in-line form. The in-line arrangement allows for the ganging of the piston sets so that a simple modular, easily-serviced engine is produced.

Hot and cold conduction rods within the thermal zones aid in transferring heat within the displacer sections.

Alternating one-way gas flow bores within the displacer blocks provide a uniflow gas flow loop for improved thermal effectiveness.

A frictional heating system is advocated as a sustaining heating means, which utilizes an electric motor and battery

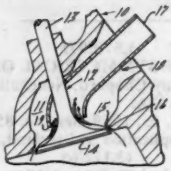


system to drive a friction drum against replaceable heat transfer elements to produce sufficient heat energy for the hot displacer zone.

3,579,981
ANTI-POLLUTION EXHAUST VALVE COMBINATION WITH FLUIDIC CONTROL AND VALVE COOLING FEATURES

Leonard P. Gau, Birmingham, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Continuation-in-part of application Ser. No. 802,944, Feb. 27, 1969, now abandoned. Filed May 6, 1970, Ser. No. 35,051
Int. Cl. F01n *3/00*
U.S. Cl. 60—29 **9 Claims**



Several embodiments showing collector arrangements disposed about exhaust valves in the cylinder head of internal combustion engines for collecting at least part of the unburned hydrocarbons from the engine exhaust. Fluidic deflection control ports are included in some embodiments to provide directional control over the flow of exhaust gases and cooling of the valves.

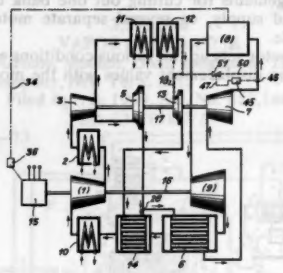
3,579,982
GAS TURBINE POWER PLANT INCLUDING A NUCLEAR REACTOR AS HEAT SOURCE

Rene Strub, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed July 29, 1968, Ser. No. 748,555
Claims priority, application Switzerland, July 27, 1967, 10681/67
Int. Cl. F01k *25/00, 3/18*
U.S. Cl. 60—36 **1 Claim**

There is disclosed a closed cycle CO_2 gas turbine power plant in which part of the CO_2 flow downstream of an intermediate level compressor is condensed prior to pumping to higher pressure and in which heat is applied to the CO_2 from a nuclear reactor in a heating step between successive expan-

sions, and in which for control of pressure in the reactor a line is provided, with adjustable flow control means therein



responsive to reactor inlet pressure, connecting the outlet of the condenser with the inlet to the reactor.

3,579,983

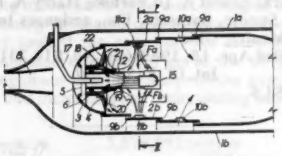
IMPROVEMENTS IN OR RELATING TO COMBUSTION CHAMBERS

Jacques Emile Jules Caruel, Dammarie-les-Lys; Herve Alain Quillevere, Issy-les-Moulineaux, and Louis Jules Bauger, Vanves, France, assignors to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation, Paris, France

Filed May 5, 1969, Ser. No. 821,794

Int. Cl. F02g *1/00*

U.S. Cl. 60—39.71 **1 Claim**



An annular combustion chamber comprising a plurality of ducts adapted to inject axially in an upstream direction a gasiform mixture containing vaporized fuel, each duct being associated with a pair of radial nozzles adapted to inject into said chamber two air jets directed toward one another, the geometrically defined area in which the jets are to meet being located at the outlet end of said duct.

3,579,984

FLUID POWER STEERING SYSTEM WITH FLUID-PRESSURE RESERVE

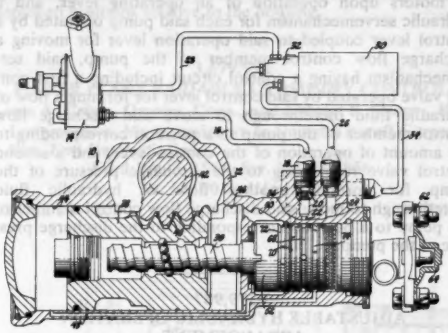
Robert P. Rohde, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 4, 1969, Ser. No. 830,241

Int. Cl. F15b *1/02, 15/18*

U.S. Cl. 60—51 **2 Claims**

A reserve supply of fluid pressure is provided for a vehicle fluid power steering system including an accumulator kept charged to a predetermined minimum pressure and communicated to the fluid power steering gear in parallel with the normal or primary pump source of pressure fluid. The rotary control valve for the fluid power gear includes a primary set of open center configuration lands and grooves operable over a normal steering travel range in the valve to selectively pressurize either side of the fluid motor, and a further set of closed center configuration lands and grooves communicated to the accumulator fluid pressure but normally blocking communication between the accumulator and the fluid motor



until normal steering travel is exceeded in either direction of actuation, as during failure of the primary pump.

3,579,985

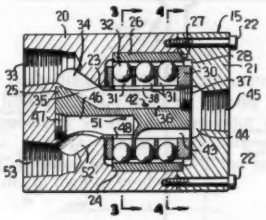
PRESSURE INTENSIFIER

George M. Barrett, R.R. #5, Galt, Ontario, Canada

Filed Apr. 25, 1969, Ser. No. 819,154

Int. Cl. F15b *3/00, 15/18*

U.S. Cl. 60—52 **3 Claims**



This disclosure relates to a hydraulic system incorporating a pressure intensifier which is a combination motor and pump and wherein the pressure intensifier has two discharge sources, one discharge source being a free discharge to a reservoir and the other discharge source being a high pressure discharge to a motor, the pressure intensifier being of the piston and cylinder type with the pistons being freely mounted within the cylinders and being associated with a cam so as to provide the required motor and pumping action.

3,579,986

DEVICE FOR CONTROLLING PUMPS FOR OPERATING HYDRAULIC MOTORS

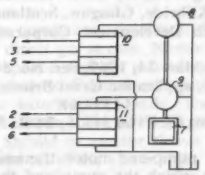
Katsuro Abe, Matsudo-shi; Saburo Kakinuma, Kashiwa-shi, and Masaaki Uno, Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 6, 1969, Ser. No. 830,940

Claims priority, application Japan, Sept. 6, 1968, 43/63756

Int. Cl. F15b *15/18*

U.S. Cl. 60—52 **3 Claims**



A device for controlling pumps for operating hydraulic motors comprising at least two variable displacement pumps,

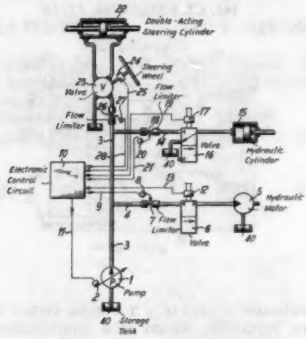
valve means for each said pump disposed between the discharge side of the pump and the hydraulic motors for switching a charge of hydraulic fluid delivered to the hydraulic motors upon operation of an operating lever, and a hydraulic servomechanism for each said pump operated by a control lever coupled to said operation lever for moving a discharge flow control member of the pump, said servomechanism having a control circuit including a first control valve operated by said control lever for forming a flow of hydraulic fluid therethrough to move said discharge flow control member of the pump to a position corresponding to the amount of operation of the control lever, and a second control valve responding to the discharge pressure of the pump for forming another flow of hydraulic fluid therethrough to move said discharge flow control member of the pump to a position corresponding to the discharge pressure of the pump.

3,579,987

ADJUSTABLE HYDRAULIC OPERATION ARRANGEMENT

Herbert Busse, Stuttgart-Stammheim, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 2, 1969, Ser. No. 863,211
Claims priority, application Germany, Oct. 4, 1968, P 18 01 13.5
Int. Cl. F15b *11/16*
U.S. Cl. 60—52 **10 Claims**



A hydraulic arrangement in which a pump is adjustably set to supply pressurized fluid to a number of different hydraulically operated devices with different operating requirements. Each of the devices has connected in front of it a control valve which is, in turn, connected in series with a flow limiter. The control valves have position indicators which transmit signals indicative of the valve position. The flow limiters and the pump are settable through electrical signals derived from an electronic control circuit. The control circuit applies the setting signals to the pump and flow limiters in response to the electrical signals received from the valve position indicators.

3,579,988

HYDROSTATIC TRANSMISSION CONTROL SYSTEM

Donald Firth; Roger Harvey Yorke Hancock, and James McCallum, East Kilbride, Glasgow, Scotland, assignors to National Research Development Corporation, London, England

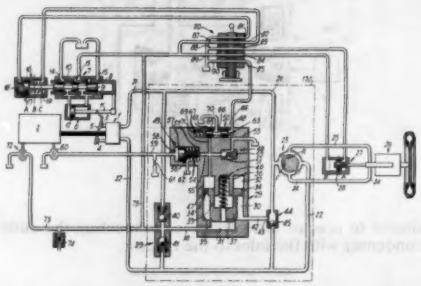
Filed Mar. 24, 1969, Ser. No. 809,492
Claims priority, application Great Britain, Mar. 25, 1968, 14374/68
Int. Cl. F16d *31/06*; B60k *7/00*
U.S. Cl. 60—53 **12 Claims**

A hydrostatic pump-and-motor transmission system, e.g. for a vehicle, in which the pump and the motor can have their displacement volumes varied in discrete steps to give a number of predetermined fixed ratios.

The pump is either a swashplate or variable eccentric pump adjustable to and between predetermined settings, or, a plurality of fixed displacement pumps switchable on the hydraulic side between, e.g. small pump alone, large pump alone, both pumps together.

The motor is either a multibank piston/cylinder motor with valving arrangements for cutting out one bank of cylinders from the fluid supply, or several separate motors —some disconnectable.

A hand selector sets up the various conditions e.g. three alternative pump displacement values with the motor at maximum displacement and two conditions with the motor at minimum displacement and the pump at two of the three pump displacement values.



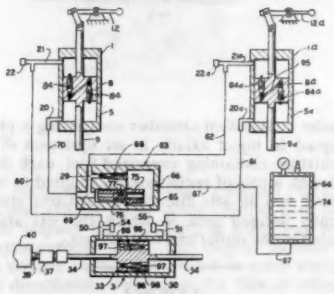
Instead of using multibank motors and cutting out one bank, four motors on four wheels of a vehicle may give the maximum motor displacement condition, the motors of either the front or the rear wheels being cut off from the pump, for the minimum motor displacement condition.

3,579,989

LINEAR SELF-SYNCHRONIZING MASTER-SLAVE HYDRAULIC REMOTE CONTROL DEVICE

Donald A. Stark; Ernest A. Di Bartolo; Harry A. Feather, and Charles H. Sundin, Sarasota, Fla., assignors to Fluid Controls, Inc., Mentor, Ohio

Filed Apr. 15, 1969, Ser. No. 816,231
Int. Cl. F15b *7/00*
U.S. Cl. 60—54.5 **10 Claims**



A plurality of manually operable master piston and cylinder assemblages and one or more slave piston and cylinder assemblages are connected in series with each other in a closed hydraulic circuit continuously pressurized at low pressure by way of an accumulator.

Each master assemblage has a valving bypass circuit such that when the piston is manually driven it functions as a conventional piston. When it is driven by a differential in the fluid pressures applied to its opposite faces, it functions as a conventional piston until it closely approaches the ends of its strokes in opposite directions, respectively, whereupon the valving bypass circuit is rendered operative and bypasses the pressure fluid around the piston from one end of the cylinder to the opposite end. This renders the device self-synchronizing simply by manual movement of one of its master pistons

through a complete forward and return stroke. Relief of excess pressures, and reduction of, and compensation for, thermal expansion and contraction are provided.

3,579,990

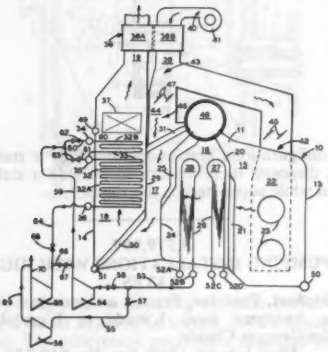
VAPOR GENERATOR

Richard A. Grams, Medina, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Apr. 3, 1969, Ser. No. 813,166

Int. Cl. F01k *7/16*

U.S. Cl. 60—73 **4 Claims**



An improved marine vapor generator of the type which includes a reheater and the means for tempering the heating gases flowing toward the reheater. The tempering means operates to control the reheater outlet steam temperature during ahead operation and to protect the reheater tube metal during astern operation of the ship propulsion system. The tempering means includes a duct arranged to discharge a regulable quantity of heated combustion air into the heating gases flowing toward the reheater. An alternative arrangement uses unheated combustion air as the tempering agent. A third arrangement uses low temperature gases as the tempering agent and includes a gas recirculating fan.

3,579,991

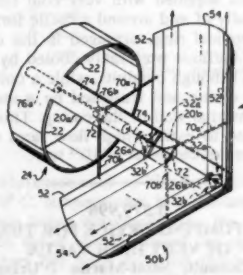
THRUST REVERSING APPARATUS FOR JET-PROPELLED AIRCRAFT

Harold E. Nelson, Jr., Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Jan. 8, 1970, Ser. No. 1,510

Int. Cl. F02k *1/24*

U.S. Cl. 60—232 **4 Claims**



Thrust reversing doors are mounted on an aircraft jet engine housing by means of links each pivoted at one end to the housing and pivoted at its other end to the aft portion of one of the two side edges of a respective one of the doors. Means are provided to limit the rotation of the links relative to the housing and the rotation of the doors relative to the links. Drive links are connected to the doors and to actuators which are mounted on the housing and which can be operated to thereby move the doors between stowed and deployed positions relative to the housing.

3,579,992

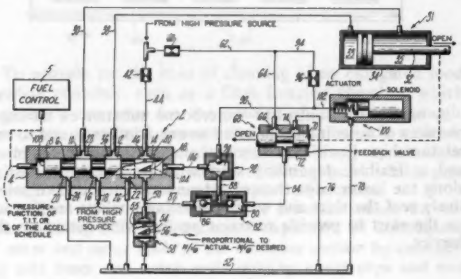
POWER PLANT VARIABLE GEOMETRY CONTROL

Louis A. Urban, Granby, Conn., and Charles F. Stearns, East Longmeadow, Mass., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Jan. 3, 1969, Ser. No. 788,856

Int. Cl. F02k *1/16, 1/18*

U.S. Cl. 60—239 **10 Claims**



Means for controlling the variable geometry of a gas turbine engine having a mechanism for varying the power turbine stator geometry or the gas generator exhaust nozzle geometry to achieve maximum acceleration time by matching the geometry of the engine to the acceleration and droop schedules of the fuel control.

3,579,993

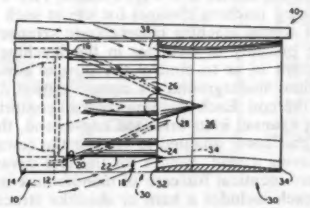
SOUND SUPPRESSION SYSTEM

Carole S. Tanner, and Remo Tontini, San Diego, Calif., assignors to Rohr Corporation, Chula Vista, San Diego, Calif.

Filed Aug. 4, 1969, Ser. No. 847,052

Int. Cl. F02k *3/04*; **B64d** *33/06*

U.S. Cl. 60—262 **2 Claims**

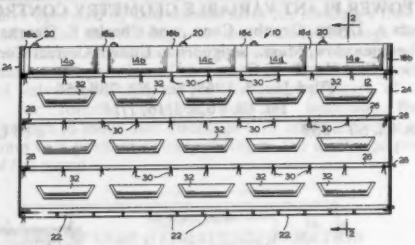


System includes a nozzle connected to turbine exhaust outlet to confine and direct gas stream. Nozzle is corrugated to form peripherally spaced radially extending lobes to divide gas into small jet streams. Conduit surrounds exhaust outlet and discharges to exterior of nozzle, and fan air flows through passages between lobes to meet gas streams at exit margin of nozzle. Shroud or ejector sleeve defines and surrounds a mixing zone aft of the exit margin. Leading edge of shroud is spaced aft of fan air conduit to provide annular flow path for entry of ambient air to surround and mix with fan air and gas. Shroud is retractable to surround nozzle in spaced relation and prevent dispersion of fan air before mixing in normal cruising flight.

3,579,994
BARRIER FOR CONTROL OF SUBSTANCES IN BODIES OF WATER

Paul Preus, Smith Road, and Charles E. Rosendahl, Flag Point, Toms River, N.J.

Filed Jan. 17, 1969, Ser. No. 792,074
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 **3 Claims**

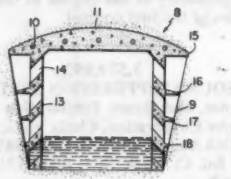


A barrier for control of waterborne substances having a plurality of units interconnected to one another in end to end relationship. Each unit has articulated flotation chambers and a flexible, depending skirt with permanent ballasting along the lower edge thereof. Means are provided to selectively reef the skirt and water ballasting pockets are formed on the skirt to provide restraint against wind action on the barrier.

3,579,995
VENTED LEACHING CHANNEL

John F. Flynn, 358 Strawberry Hill Road, Concord, Mass.

Filed June 10, 1969, Ser. No. 831,881
Int. Cl. E02b *13/00*
U.S. Cl. 61—13 **3 Claims**



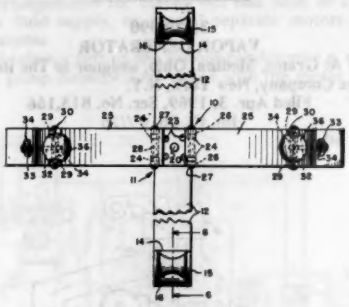
This invention relates to sewage systems, FIG. 3, it particular to a vented leaching channel for use in such systems. A plurality of vented leaching channels are arranged in a corresponding plurality of trenches in the leaching field of a sewage system so as to control the flow of sewage and to form a volume underground for storage output during aerobic action thereon. Each leaching channel comprises a series of leaching channel units arranged end-to-end, the first unit having an end cover adapted to receive the sewage and the last unit having a vent. Except for the end cover and vent, the units are identical for ease of manufacture and installation, and each includes a barn or shedlike structure having sheltered apertures in its walls adapted to permit outward flow of sewage while preventing inward flow of dirt and other undesirable material. Special access apertures are also provided in all the units.

3,579,996
PORTABLE BOAT RAMP

Jerry W. Edson, Wichita, Kans. (R1 Clearwater, Kans. 67026)

Filed Sept. 5, 1969, Ser. No. 855,623
Int. Cl. B63c *1/00, 3/12*
U.S. Cl. 61—66 **7 Claims**

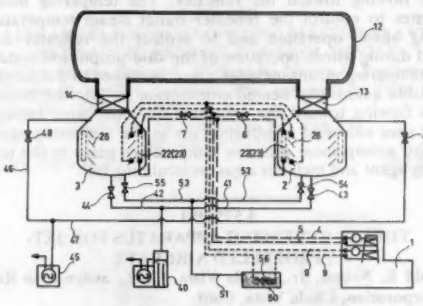
A portable boat ramp for beaching or launching small boats which eliminates the need to drag such boats across a sandy or rocky beach with resulting damage to the hull. The ramp may be conveniently carried manually and is capable of being quickly adjusted between an extended operative position and a folded position for storage or transportation. Adjustable bolsters are provided for engaging hull sides of different configurations and cooperate with a stabilizing bar which is disposed therebeneath to provide a stable support for a boat while supported on the ramp.



3,579,997
CRYOPUMPING INSTALLATIONS WITH HIGH FLOW-RATES

Michel Rapinat, Fontaine, France, assignor to L'Air Liquide, Societe Anonyme pour L'etude et L'exploitation, des procedes Georges Claude

Filed July 10, 1969, Ser. No. 840,734
Claims priority, application France, July 30, 1968, 161,161
Int. Cl. B01d *5/00*
U.S. Cl. 62—55.5 **12 Claims**



A cryopump is constituted by a fluidtight casing inside which is arranged a plurality of condensation plates carried by a cooling coil supplied with very cold fluid, the whole disposed externally of and around a baffle formed by a plurality of frustoconical rings arranged in the extension of a stop valve. The baffle is preferably cooled by a moderately cold fluid (80°K) though conduits, while a coil embedded in the wall of the casing and traversed by a moderately cold fluid cools an internal wall of the casing. This cryopumping device is adapted to extract high flow rates at a relatively moderate pressure of the order of 10^{12} torr.

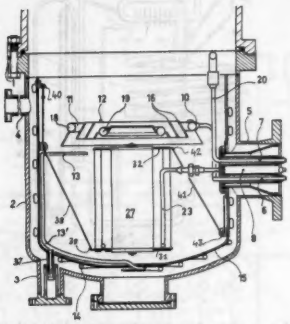
3,579,998
CRYOGENIC PUMPING DEVICE FOR THE CREATION OF VERY HIGH VACUA

Jean-Jacques Thibault, Saint-Martin D'Uriage, and Jean-Claude Boissin, Montbonnot-Saint-Martin, France, assignors to L'Air Liquide, Societe Anonyme pour L'Etude et L'Exploitation, des procedes Georges Claude

Filed July 25, 1969, Ser. No. 844,779
Claims priority, application France, Aug. 1, 1968, 161,426
Int. Cl. B01d *5/00*
U.S. Cl. 62—55.5 **7 Claims**

A cryogenic pumping device for the creation of very high vacuum, comprising means for collecting gases at very low

temperature, said collecting means including adsorption means and condensation means, the condensation means being located upstream of the adsorption means with respect to the travel of the gases, the whole being housed in a casing cooled to a moderately low temperature and formed, on the



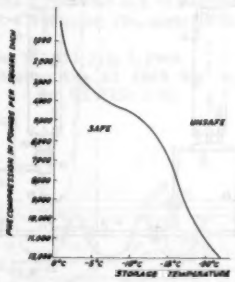
side of the passage communicating with the chamber to be pumped, by a baffle adapted to form a screen against external radiation. The adsorption means are mounted on an extension of a metal wall which forms the condensation means, each metal wall being adjacent to a segment of a cooling coil through which is circulated a fluid at very low temperature.

3,579,999

METHOD AND APPARATUS FOR THE PRESERVATION OF BIOLOGICAL SUBSTANCES

Ralph E. Schwartz, Lindenhurst, N.Y., assignor to Redeco, Inc., East Islip, L. I., N.Y.

Filed Aug. 8, 1968, Ser. No. 757,195
Int. Cl. A61m *1/02*
U.S. Cl. 62—56 **8 Claims**



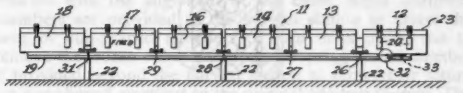
Biological substances such as blood are stored under pressure at below 0° C. temperatures, in a substantially nondilatable vessel. Upon being introduced into the vessel, the temperature of the vessel and the blood are reduced to 4° C.; when equilibrium has been achieved the blood within the vessel is precompressed at a controlled rate several thousand pounds per square inch by the application of mechanical leverage to a vessel piston. Thereafter, the vessel and blood are reduced to a final temperature from 0° C. to −21° C. This temperature reduction, because of the conjunctive effect of the volumetric expansion of the blood and nondilation of the vessel, self-generates a pressure from 15 to 35,000 p.s.i. The vessel may now be stored at the final temperature and the blood within it maintained without deleterious effects.

3,580,000

CHAMBER FOR FOOD TREATING APPARATUS

Richard C. Wagner, Clarendon Hills, Ill., assignor to Integral Process Systems, Inc.

Filed Mar. 17, 1969, Ser. No. 807,904
Int. Cl. F25d *3/10, 25/04*
U.S. Cl. 62—77 **11 Claims**



To provide for the ease of cleaning of an elongated food treating chamber, such as a flash freezing chamber, which contains a conveyor for the passage of food therethrough, means are provided for separating the chamber into sections, opening a lid portion of each section and lifting the conveyor out of the chamber by means of lifting jacks which pass through the spaces between the separated sections.

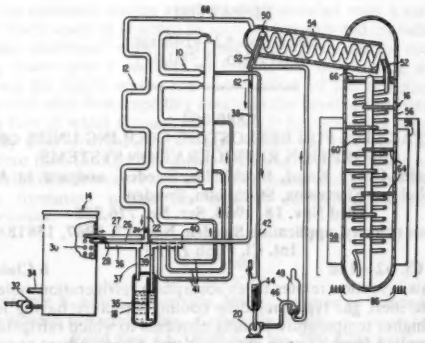
Another aspect of the invention provides means for accommodating differential thermal expansion or contraction of inner and outer walls of the chamber section by connecting said inner and outer walls only by cover caps and end caps which are slidably attached thereto.

3,580,001

ABSORPTION REFRIGERATION MACHINE WITH CONCENTRATION CONTROL TANK

Keith V. Eisberg, Martinsville, Ind., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 3, 1968, Ser. No. 756,783
Int. Cl. F25b *15/04*
U.S. Cl. 62—101 **4 Claims**



An absorption refrigeration system employing a liquid storage tank to vary the concentration of refrigerant in the solution supplied to the absorber under varying ambient temperature operating conditions.

3,580,002

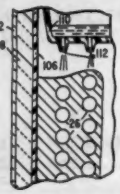
FREEZE LIMITING ABSORPTION REFRIGERATION MACHINE

John T. Fisher, Indianapolis, Ind., assignor to Carrier Corporation, Syracuse, N.Y.

Filed June 7, 1968, Ser. No. 735,380
Int. Cl. F25b *15/04, 37/02*
U.S. Cl. 62—101 **2 Claims**

An absorption refrigeration system utilizing chilled water as a heat exchange medium. The system includes a chiller

which provides reduced heat exchange area upon a drop in ambient air temperature by selectively block water flow

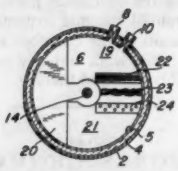


paths between the chiller coils by the formation of ice to prevent complete freezeup of the chiller.

3,580,003
COOLING APPARATUS AND PROCESS FOR HEAT-ACTUATED COMPRESSORS

Joseph P. Dolan, Chicago, Ill., assignor to The Institute of Gas Technology, Chicago, Ill.

Filed Aug. 14, 1968, Ser. No. 752,710
Int. Cl. F25b *1/00*
U.S. Cl. 62—115 **18 Claims**



Apparatus and process for cooling heat-actuated engines or compressors by use of boiling refrigerant, especially suitable for use with heat-actuated regenerative compressor systems used in conjunction with a condenser-expansion-compression cooling cycle.

ERRATUM

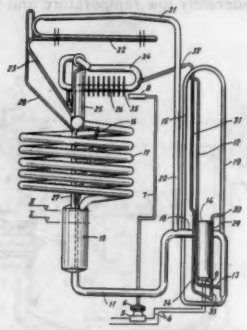
For Class 62—148 see:
Patent No. 3,580,013

3,580,004
APPARATUS FOR DEFROSTING COOLING UNITS OF ABSORPTION REFRIGERATION SYSTEMS

Wilhelm Georg Kogel, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Nov. 18, 1968, Ser. No. 776,535
Claims priority, application Sweden, Nov. 17, 1967, 15818/67
Int. Cl. F25b *15/10*
U.S. Cl. 62—148 **6 Claims**

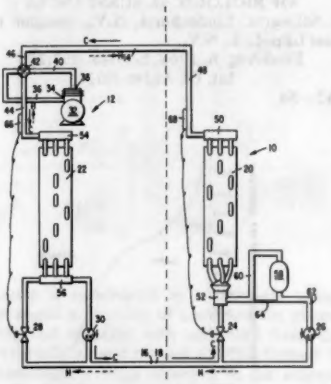
This invention relates to an absorption refrigeration system of the inert gas type including cooling structure having low and higher temperature cooling elements to which refrigerant is supplied from a vapor expulsion unit having a heat receiving part from which heat is derived for expelling refrigerant vapor from absorption liquid. The vapor expulsion unit includes a first pump for lifting liquid by vapor-liquid lift action to effect normal circulation of absorption liquid during operation of the system. The heat receiving part is heated by a source of heat controlled by a thermostat affected by the temperature of the higher temperature cooling element either to render said first pump operable to circulate absorption liquid or to render it inoperable to stop circulation of the liquid. The absorption liquid circuit has a part at a level normally free of liquid and above the liquid surface level therein when normal circulation of liquid is effected and at a level below the liquid surface level in the circuit when normal circulation of liquid has stopped. The important feature of the invention resides in providing a second pump for lifting liquid by vapor-liquid lift action by heat which also is derived from the heat receiving part and is connected to the one part to receive liquid therefrom when circulation of absorption liquid has stopped. Fluid raised by the second pump is conducted to the higher temperature cooling element to melt frost which tends to form thereon.



3,580,005
REFRIGERATION SYSTEM

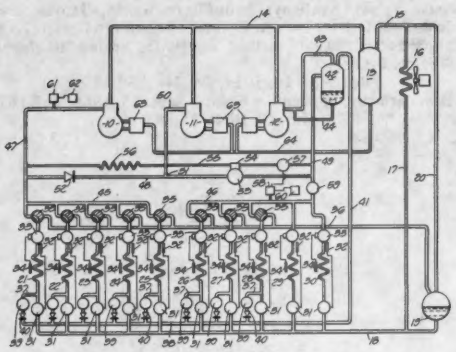
Harry T. Hale, Bridgeport, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 1, 1969, Ser. No. 812,215
Int. Cl. F25b *45/00*
U.S. Cl. 62—149 **2 Claims**



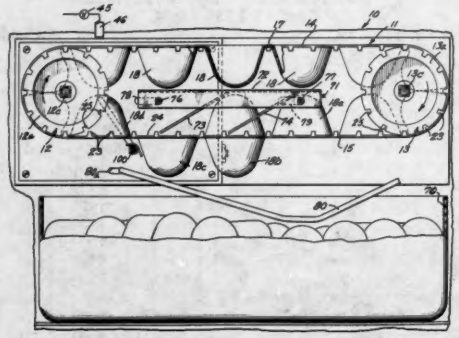
The present invention is directed to refrigeration systems of the type referred to in the art as heat pumps comprising a compressor, a pair of series-connected heat exchangers, reversing valve means for reversibly connecting the compressor to the heat exchangers for effecting flow of refrigerant through a portion of the circuit in either direction, refrigerant flow control means in the circuit, and a refrigerant container or receiver connected between the two heat exchangers for storing a portion of the refrigerant charge during operation of the system, the container being so constructed and arranged as to readily accommodate varying charge imbalances in the system and also having in communication therewith tubular means for effecting essentially complete removal of oil entrapped in the container and its return to the compressor when the system is reversed from the heating to the cooling cycle, thereby assuring an adequate supply of oil in the compressor for lubrication purposes.

3,580,006
CENTRAL REFRIGERATION SYSTEM WITH AUTOMATIC STANDBY COMPRESSOR CAPACITY
Lester K. Quick, 868 Westview Crescent, Vancouver, British Columbia, Canada
Filed Apr. 14, 1969, Ser. No. 815,866
Int. Cl. F25b 5/00
U.S. Cl. 62—196 18 Claims



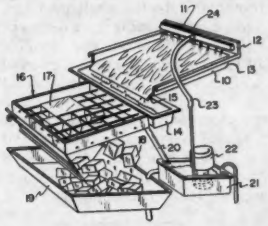
A central refrigeration system for supermarkets and the like requiring two or more temperature levels of refrigerated fixtures wherein separate compressors operate the fixtures at different temperature levels and with only one or two large compressors for each temperature level. The system employs a single condenser-receiver for the refrigerant discharged from all of the compressors and a single oil separator for returning oil to the compressors. A control arrangement responsive to an abnormal increase in the suction pressure on a given compressor automatically operates a valving arrangement to transfer at least a portion of the refrigerant load on that compressor to another compressor normally operating fixtures at a different temperature level.

3,580,007
BELT-DRIVEN ICE MAKER
Carl C. Bauerlein, Clearwater, Fla., assignor to Eaton Yale & Towne Inc.
Division of Ser. No. 702,914, Feb. 5, 1968.
and this application Aug. 22, 1969, Ser. No. 870,711
Int. Cl. F25c 1/10
U.S. Cl. 62—345 5 Claims



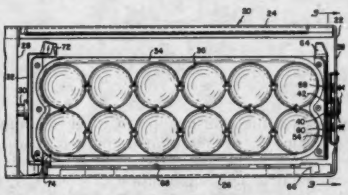
An automatic ice cube maker including a sprocket-driven endless belt having a plurality of flexible invertible ice cube forming cup-shaped members or cells formed therein. A water-fill station and an ice cube harvest station are situated respectively adjacent upper and lower horizontal reaches of the belt. A stallable electric motor drives the sprockets through a gear train to move the belt continuously through a looped path of travel and past the water-fill and ice-harvest stations. A water supply mechanism for filling the cells with water comprises a pair of alignable cooperating cams which are connected to different ones of the gears of the gear train for rotation at different speeds. A water control switch controls the operation of the water supply mechanism so that a predetermined amount of water is supplied to each of the cells as each cell passes through the water-fill station in timed relation with the alignment of the cams. Rigid abutment members are provided at the harvest station to invert the cells or cup-shaped members or turn them inside out to remove the frozen cubes therefrom. A spring-biased member is provided beyond the harvest station to reinvert or return the cup-shaped members to the original position thereof. The spring bias member includes a stripper for achieving complete removal of the cubes from the cells. An ice level sensing mechanism is also driven by the gear train to physically stop the rotation of the motor when the ice at the harvest station has attained a predetermined level, but only when the cam members are out of alignment with one another and the water control switch is inoperative to avoid overflowing of the cup-shaped members at the water-fill station.

3,580,008
ICEMAKER WITH WATER DISTRIBUTOR
Walter C. Barnard, White Bear Lake, and Donald C. Hodapp, St. Paul, Minn., assignors to Whirlpool Corporation
Filed Apr. 24, 1969, Ser. No. 818,973
Int. Cl. F25c 1/12
U.S. Cl. 62—347 16 Claims



An icemaker having a refrigerated member over a surface of which water is directed to form an ice slab and including a water distributor with an internal reservoir means for receiving water and a plurality of outlets for distributing water along the width of the ice slab portion of the refrigerated member and flow-impeding means in the reservoir for impeding flow of water through the reservoir for achieving substantially even distribution of water within the reservoir means before flow through the outlet means in order that the water distribution is even onto the refrigerated member to aid in the formation of an ice slab of substantially uniform thickness.

3,580,009
ICE MAKER
Lawrence E. Snow, Greenville, Mich., assignor to White Consolidated Industries, Inc., Greenville, Mich.
Filed Jan. 13, 1969, Ser. No. 790,820
Int. Cl. F25c 1/10
U.S. Cl. 62—353 1 Claim



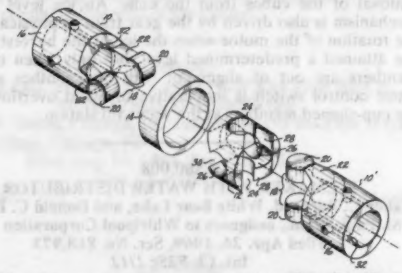
An automatic icemaker in which a flexible ice tray is twisted to loosen the ice cubes by unidirectional rotation of

one end of the tray while rotation of the opposite end of the tray is temporarily restrained and a reverse twist force is imparted to the tray by relatively accelerating the other end of the tray before the tray is returned to its normal upright position.

3,580,010
UNIVERSAL JOINT

Sidney L. Fisher, Renton, Wash., assignor to Spider Staging, Inc., Seattle, Wash.

Filed Sept. 29, 1969, Ser. No. 861,866
Int. Cl. F16d *8/18*
U.S. Cl. 64—9 7 Claims

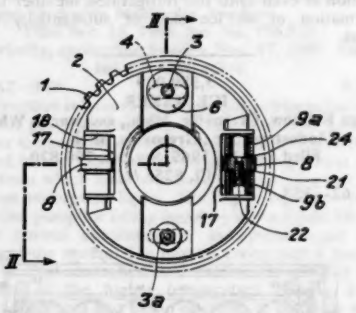


The essential components are a pair of identical end members, a coupler member, and a retainer ring. Each end member is connectable to the shaft part and includes cylindrical pivot head means having an axis perpendicular to the main axis of the end member. The coupler member comprises a pair of transverse socketways, each of which is circular in cross section and extends perpendicular to the other socketway. The head means of one end member is slid axially into one of the socketways and the head means of the other end member is slid axially into the second socketway. A retainer ring is slid longitudinally over one of the end members into a position surrounding the coupler member in which said ring covers the end openings of the socketways.

3,580,011
COUPLING

Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Continuation-in-part of application Ser. No. 676,590, Oct. 19, 1967, now abandoned. This application Nov. 24, 1969, Ser. No. 879,135
Int. Cl. F16d *3/14*
U.S. Cl. 64—27 2 Claims

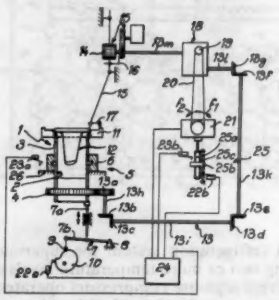


A coupling for the transmission of torques comprises two discs and means to permit limited relative rotation of the discs, with friction between them. For restoration of an equilibrium relative angular position of the discs, there are oppositely acting separate circumferentially disposed springs of adjustable prestress engaged between the two discs. In another embodiment each of the springs is permitted to undergo compression but not expansion, and the prestressed compression of the springs undergoing compression for one sense of relative rotation of the discs is greater than the maximum force of friction between the discs so that upon release of the discs they will be restored to their equilibrium relative angular position notwithstanding the force of friction.

3,580,012
DEVICE FOR CONTROLLING THE DELIVERY OF THREAD TO A KNITTING MACHINE

Eugene Voisin, Souligny; Jean-Pierre Raisin, Troyes, and Jean-Paul Delair, Troyes, France, assignors to Centre Technique Industrial dit, Institut Textile De France, Boulogne, S/Seine, France

Filed Sept. 19, 1969, Ser. No. 859,416
Claims priority, application France, Sept. 23, 1968, 167,161
Int. Cl. D04b *15/48*
U.S. Cl. 66—55 3 Claims

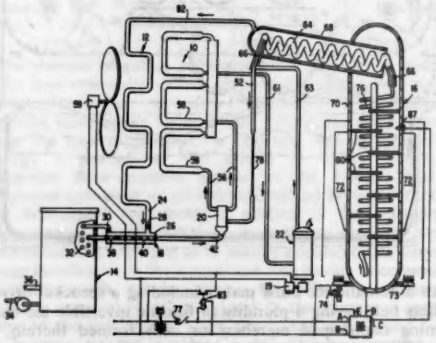


A device for controlling the delivery of thread to a knitting machine comprises a speed variator which is connected to a mechanical transmission extending between a cylinder and thread furnisher of the knitting machine, and a motor which controls the variator. The motor is reversible in forward and reverse directions and has two pairs of switches which start and stop the motor in both directions. The starting switches are operated by a control cam and programming element of the knitting machine. A follower device is provided whose travel corresponds to a predetermined length of fabric produced by the knitting machine and this follower device operates the stopping switches.

3,580,013
ABSORPTION REFRIGERATION MACHINE WITH GENERATOR LEVEL CONTROL

Gary W. Ballard, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed June 2, 1969, Ser. No. 829,622
Int. Cl. F25b *15/04*
U.S. Cl. 62—148 5 Claims



An absorption refrigeration system including an electronic control circuit employing a level sensing probe to prevent

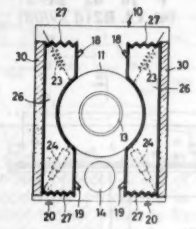
operation of the absorption refrigeration system heating means when the probe is not submerged in absorbent solution.

3,580,014

MACHINE HAVING A ROTARY MOTION, ESPECIALLY WASHING MACHINE, FURNISHED WITH BALLAST

Lamberto Mazza, Pordenone, Italy, assignor to Industrie A. Zanussi S.p.A., Pordenone, Italy

Filed Jan. 22, 1969, Ser. No. 792,962
Claims priority, application Italy, Feb. 13, 1968, 12701A/68
Int. Cl. D06f *37/22*
U.S. Cl. 68—23.1 8 Claims



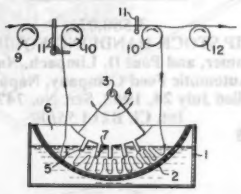
A machine having a unidirectional or reciprocating rotary motion, such as a washing machine, wherein a container is provided which can be charged with a ballast material, preferably water, in order to dampen the oscillations and vibrations transmitted to the whole machine during its operation, the ballast material being dischargeable to facilitate the transport and the handling of the machine.

3,580,015

DEVICE FOR TREATING TEXTILE FABRIC

Hajime Horie; Tadao Hirano, and Tokihide Suzuki, Fukui-ken, Japan, assignors to Fukui Seiren Kako Kabushiki Kaisha Keya, Fukui-shi, Fukui-ken, Japan

Filed Aug. 15, 1969, Ser. No. 850,511
Claims priority, application Japan, Sept. 6, 1968, 43/63721
Int. Cl. B05c *3/134, 3/136*
U.S. Cl. 68—53 1 Claim



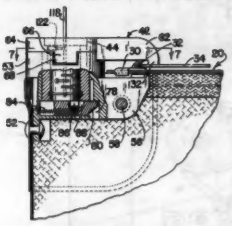
A device for continuously treating a textile fabric, comprising a tank containing liquid therein, an arcuately curved, concave false bottom provided in said tank, a rotary frame pivotally mounted in said tank above said false bottom and having a curvature corresponding to that of said false bottom, means for alternately rotating said rotary frame in forward and backward directions like a pendulum, said rotary frame being provided on its peripheral surface with a plurality of partitioning plates each lying in a radial plane of said rotary frame to divide said peripheral surface into sections and a plurality of resistance plates each lying in an axial plane of said rotary frame to produce turbulent flow in the liquid above said false bottom during operation, whereby the textile fabric is successively passed through the respective sections and is subjected to breaking action by the turbulent flow of the liquid between the rotary frame and the false bottom.

3,580,016

KEEPER LOCK FOR A SLIDE FASTENER

William J. Kerr, Glenview, Ill., assignor to Chicago Lock Co., Chicago, Ill.

Filed Apr. 15, 1970, Ser. No. 28,656
Int. Cl. E05b *67/38, 11/06;* A44b *19/00*
U.S. Cl. 70—68 10 Claims



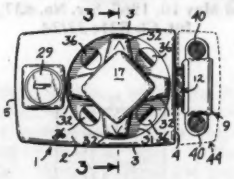
A concentric three-part, key-operated keeper lock for a slide fastener and including an outer lock barrel having a radial anvil portion which underlies the pull tab of the slide fastener when the fastener is in its closed position, an intermediate telescopically movable rotatable handle having a radial keeper flange which is adapted to overlie the pull tab when the barrel and handle are telescoped together, and an inner tumbler-type cylinder having a locking bolt which maintains the barrel and handle telescoped. In the telescoped position of the handle and barrel, interlocking shoulders prevent rotation of the handle. In the unlocked condition of the cylinder, the handle may be moved axially to free the interlocking shoulders, after which the handle may be rotated throughout a 90° arc in order to withdraw the keeper flange from its tab-overlying position. The keeper lock is self-locking in that when it is in its unlocked condition it may be manipulated to a locked condition without the use of the proper key.

3,580,017

LOCK WITH MEANS CONCEALING MOUNTING FASTENERS

Russell W. Waldo, St. Paul, Minn., assignor to Ideal Security Hardware Corporation, St. Paul, Minn.

Filed Nov. 5, 1969, Ser. No. 874,277
Int. Cl. E05b *9/08, 15/02*
U.S. Cl. 70—81 10 Claims

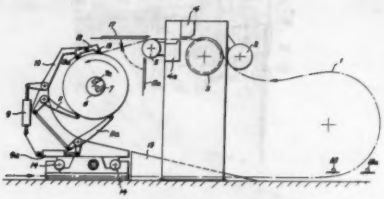


A deadlock including a bolt housing and a cooperating strike element each having openings for reception of fastening means for anchoring the same one to a door and the other to a door frame. A bolt-operating knob on the housing conceals the fastening means when the bolt is in both its extended strike-engaging and retracted strike-releasing positions, the fastening means being exposed only when the bolt is moved to an intermediate position between its fully extended and retracted positions. A cover is press fitted on the strike to conceal the fastening means thereon.

3,580,018
MACHINE FOR COILING ELONGATED STRIPLIKE MATERIAL

Hans Gott, Graz, and Josef Ritter, Graz-Krotsbach, Austria, assignors to EVG Entwicklungs und Verwertungs-Gesellschaft m.b. H, Graz, Austria

Filed June 13, 1968, Ser. No. 736,852
Claims priority, application Austria, June 16, 1967, A5638/67
Int. Cl. B21b *37/00;* **B21c** *47/00;* **B21d** *45/00*
U.S. Cl. 72—12 **10 Claims**

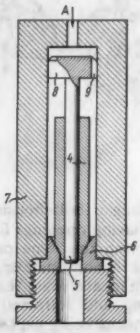


A machine for coiling elongated striplike material such as welded mesh reinforcement of the kind in which the material is coiled on a mandrel from which the completed coil is removed after the coil and mandrel have been separated by axial movement relative to each other is provided with a gripper mechanism for gripping the coil and this mechanism is arranged to travel between a first position near the mandrel and a second position away from the mandrel. The gripper mechanism has at least two grippers capable of pivoting inwards from opposite sides into contact with the outer surface of a coil mounted on the mandrel so that they thrust against the surface of the coil and hold it together. The gripper mechanism is arranged so that during its movement from the first position into the second position, the grippers continue to hold the coil firmly together and prevent it from uncoiling.

3,580,019
METHOD OF MANUFACTURING ROD, SHAPED AND TUBULAR PRODUCTS FROM DIFFICULT-TO-WORK METALS AND ALLOYS, PREFERABLY HIGH MELTING-POINT AND CHEMICALLY ACTIVE ONES

Boris Ivanovich Beresnev, Krasnoprudnaya 7/9, kv.31; Evgeny Dmitrievich Martynov, MGU sektor 1, kv. 13; Jury Nikolaevich Ryabinin, Vorobievskoe shosse 2, kv. 40; Mikhail Vasilievich Maltsev, ul Streletskaya 26-a kv. 40; Georgy Pavlovich Britnev, ul Lobachika 10, kv. 4; Anatoly Vasilievich Kocherov, 3 Pavlovsky per., 13, kv. 2, Moscow; Dmitry Konstantinovich Bulychev, ul Kuibysheva,123-B, kv. 24, Sverdlovsk, and Kuzma Petrovich Bodionov, ul Malysheva 135, Kv. 1, Sverdlovsk U.S.S.R.

Filed May 10, 1967, Ser. No. 637,450
Int. Cl. B21c *23/24*
U.S. Cl. 72—47 **7 Claims**

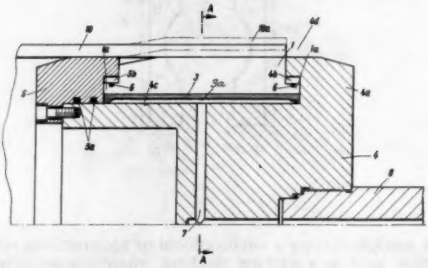


A method of extruding materials that are difficult to extrude in which a blank of the material is enclosed in a container with a portion extending into an extrusion die and the blank is subjected to high pressure fluid to press the blank through the blank may be coated with a metal or metals such as nickel and copper, and a a lubricant applied thereto. The outer coating of a blank coated with plural layers of metal may be porous.

3,580,020
APPARATUS FOR CALIBRATING PIPES

Ali Bindernagel, Dusseldorf-Gerresheim; Erwin Kost, Osterath, and Karl-Hans Staat, Homberg Bie Ratingen, Germany, assignors to Firma Friedrich Kocks, Dusseldorf, Germany

Filed Aug. 23, 1968, Ser. No. 754,759
Claims priority, application Germany, Sept. 1, 1967, P 16 02 289.2
Int. Cl. B21d *39/08*
U.S. Cl. 72—58 **11 Claims**

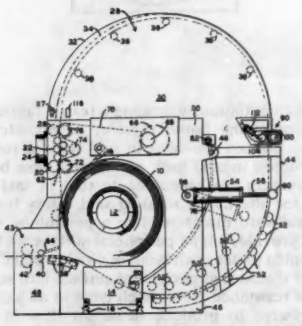


Apparatus for calibrating pipes by expansion or swaging, comprises a housing holding an annular deforming tool consisting of a number of axially extending segments which are arranged side-by-side to form a cylinder and which are movable radially outwards or inwards, this radial movement being limited by stops which engage the ends of the segments, and a cylindrical sleeve which bears on either the inner or the outer faces of the segments and which forms a pressuretight chamber between itself and the housing, so that, in use, when the chamber is supplied with fluid under pressure the sleeve is forced radially outwards or inwards, hence forcing the segments radially outwards or inwards into engagement with the inside or outside of a pipe until further radial movement is prevented by the stops, at which time the pipe is expanded or swaged to an exact size determined by the apparatus.

3,580,021
STRIP STOCK HANDLING EQUIPMENT

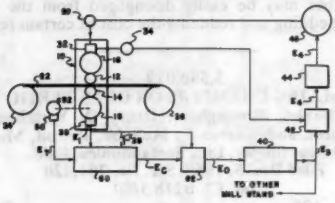
Donald L. Cramer, and Paul D. Limpach, Napoleon, Ohio, assignors to Automatic Feed Company, Napoleon, Ohio

Filed July 24, 1968, Ser. No. 747,309
Int. Cl. B21d *55/00*
U.S. Cl. 72—5 **8 Claims**



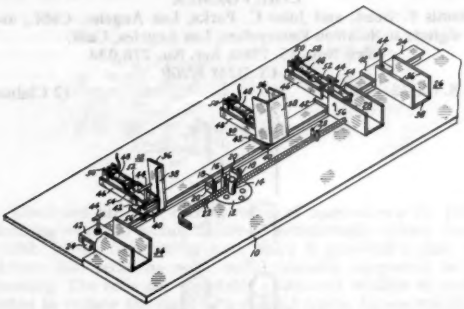
Equipment for uncoiling and conditioning strip stock to be utilized in devices such as punch presses, shears, and stamping machines.

3,580,022
ROLLING MILL INCLUDING GAUGE CONTROL
Marion D. Waltz, and Lewis A. Drake, Youngstown, Ohio, assignors to The Youngstown Sheet and Tube Company, Mahoning County, Ohio
Filed Nov. 12, 1968, Ser. No. 774,775
Int. Cl. B21b *37/08*
U.S. Cl. 72—8 10 Claims



In combination with a rolling mill and control means for controlling the spacing between a set of work rolls therof the method and means for producing an electrical control signal for said control means which is free of a component which varies cyclically with the rotation of the rolls, e.g., the eccentricity of the rolls.

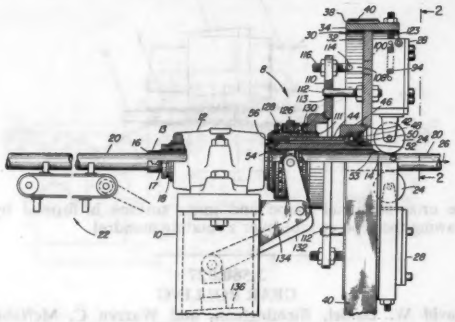
3,580,023
AUTOMATED STOPS FOR BAR BENDING MACHINE
Neal W. Merrill, Bethlehem, and Charles R. Nippert, Allentown, Pa., assignors to Bethlehem Steel Corporation
Filed Dec. 9, 1968, Ser. No. 782,197
Int. Cl. B21j *7/26*
U.S. Cl. 72—22 2 Claims



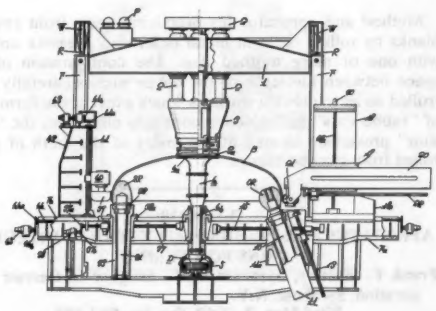
A bar bending machine comprising a rotatable bending disc having a central pin and a bending pin is provided with a plurality of stops for positioning a bar longitudinally prior to the actuation of said disc. The machine is programmed whereby said disc sequentially rotates through predetermined angles, bending the bar a plurality of times, each rotation being controlled by a switch. The stops are connected to a circuit whereby the proper stop is sequentially moved into and out of the path of the bar during the bending operation.

3,580,024
METHOD AND APPARATUS FOR CORRUGATING TUBES
Howard F. Mattil, Yonkers, N.Y., assignor to Phelps Dodge Copper Products Corporation, New York, N.Y.
Filed Nov. 27, 1968, Ser. No. 779,456
Int. Cl. B21d *13/04*
U.S. Cl. 72—77 15 Claims

This invention comprises a tube corrugating method and apparatus in which a forming tool is selectively engaged forcefully with and disengaged from the tube while the tube advances axially past the tool. The tube may be pressurized internally with a fluid to improve corrugation shape.



3,580,025
END PLATE FORMING APPARATUS
Yasutoshi Hayashi, No. 2, 5-Chome Senbon-dori Nishinari-ku, Osaka, Japan
Filed Dec. 17, 1968, Ser. No. 784,358
Claims priority, application Japan, Aug. 24, 1969, 43/60584
Int. Cl. B21h *1/00*
U.S. Cl. 72—84 6 Claims

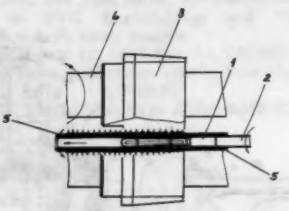


End plate forming apparatus comprising an upper support member and a lower support member provided on the same axis to hold therebetween and revolve a blank and a plurality of sets of forming rollers to be moved on the same locus as the curved surface of the required end plate to form the required end plate by cooperative working.

3,580,026
METHOD AND APPARATUS FOR MANUFACTURING FINNED PIPES
Ioan Luca, Bucharest, Romania, assignor to Institutal De Cercetari Tehnologice Pentru Constructii De Masini Soseaua Oltenitei, Bucharest, Romania
Filed Dec. 17, 1968, Ser. No. 786,824
Int. Cl. B21d *19/08*
U.S. Cl. 72—96 8 Claims

Cooling fins are rolled onto the outer surface of a pipe or tube, while simultaneously the cross section of the pipe or tube is changed to an oval or elliptical shape. The inner sur-

face of the pipe or tube may be either smooth or provided with grooves. The fins are formed by three rotating dies, and

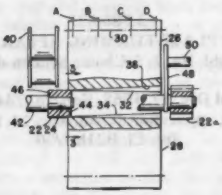


the cross-sectional shape and inner surface is formed by drawing the pipe or tube over a rotating mandrel.

3,580,027
GEAR ROLLING

David W. Daniel, Birmingham, and Warren C. McNabb, Detroit, Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Filed Dec. 2, 1968, Ser. No. 780,390
Int. Cl. B21h *5/02*
U.S. Cl. 72—98 **14 Claims**

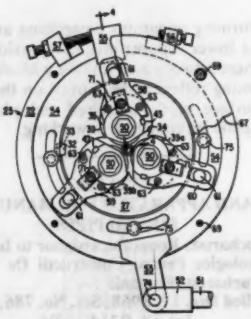


Method and apparatus for producing gears from circular blanks by rolling them in metal deforming pressure contact with one or more toothed dies. The configuration of the space between the teeth of the die or dies is carefully controlled so as to provide surfaces which prevent the formation of "rabbit ears" and which accordingly eliminates the "cold shut" previously located at the crests of the teeth of gears rolled from circular blanks.

3,580,028
APPARATUS FOR PRODUCING EXTERNAL INTEGRAL FINS FOR TUBING

Frank F. Walters, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 3, 1968, Ser. No. 803,895
Int. Cl. B21h *3/12*
U.S. Cl. 72—98 **4 Claims**

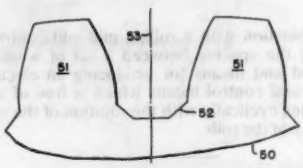


An improvement in apparatus for forming axially spaced integral helical fins on a length of tubing, the apparatus including a body member mounted within and interconnected to an outer housing which defines the outer surface of a tube finning head assembly. Journaled within the body member are a plurality of crescent-shaped cams which operate a plurality of forming roll assemblies including tool support arbors. Supported on the arbors are a plurality of die means which define axially-spaced peripheral portions with grooves formed therebetween. The body member is made of heat-hardened steel, thereby increasing its wear resistance. The body member may be easily disengaged from the housing thereby expediting and reducing the cost of certain repairs.

3,580,029
ROLLING CHAMFERS ON GEAR TEETH

David W. Daniel, Birmingham; Henry O. Verschaeve, St. Clair Shores, and Warren C. McNabb, Detroit, Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Filed Dec. 5, 1968, Ser. No. 781,420
Int. Cl. B21h *5/00*
U.S. Cl. 72—108 **7 Claims**

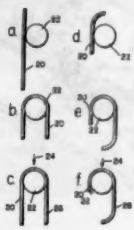


Gear rolling dies are provided with inclined chamfer-forming ramp surfaces at the bottoms of the tooth spaces adapted to form chamfers at the tops of the gear teeth along the corners defined by the intersection of the crests of the teeth and the flank surfaces.

3,580,030
COIL FORMER

Dennis P. Bean, and John C. Parks, Los Angeles, Calif., assignors to Solatron Enterprises, Los Angeles, Calif.

Filed Nov. 15, 1968, Ser. No. 776,034
Int. Cl. B21f *37/00*
U.S. Cl. 72—130 **12 Claims**



A method of making single-turn, planar, circular coils is disclosed in which a substantially linear rodlike element is cut and bent into a circle of predetermined radius through successive bending and cutting steps. The circular ring is formed from an element which has been precut in the shape of an elongated "C" which has, at each of its ends, a 90° bend to a radius of curvature substantially equal to the predetermined radius.

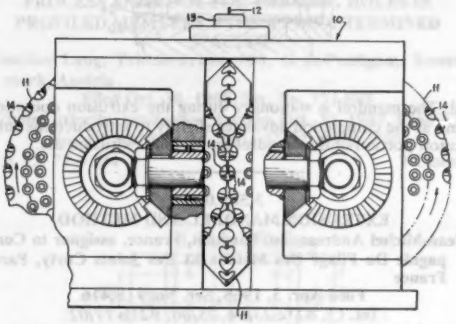
3,580,031
MANUFACTURING APPARATUS

Vincent J. Donadio, Pompton Plains, and Olavi F. Anderson, Succasunna, N.J., assignors to The United States of America as represented by the Secretary of the Army

Filed June 20, 1969, Ser. No. 835,045
Int. Cl. B21d *13/10*
U.S. Cl. 72—186 **4 Claims**

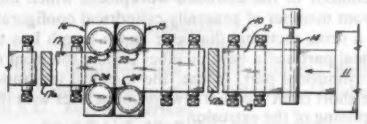
A machine for manufacturing flechettes at substantially higher rates of production and operating efficiency. The

machine has a plurality of rotatable wheels each having a plurality of peripherally spaced eccentric bushings. Each bushing has a central axis that extends radially of its wheel and perpendicularly of a peripheral centerline of the wheel. Each bushing contains a die insert and is mounted for transverse adjustment of the bushing central axis relative to the



corresponding wheel centerline. Each die insert has a fin-forming portion and a nose-forming portion that cooperate to provide a positive means of feeding a workpiece through the machine. Each wheel has a main body-forming portion intermediate the fin-forming portion of each die and the nose-forming portion of the following adjacent die.

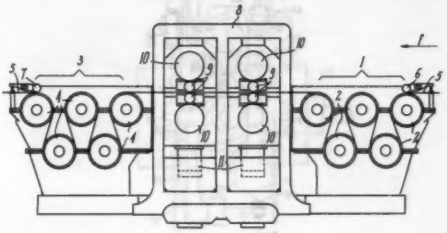
3,580,032
APPARATUS FOR REDUCING THE WIDTH OF METALLIC SLABS
Morris Denor Stone, and Howard Hubbell Talbot, Pittsburgh, Pa., assignors to United Engineering and Foundry Company
Filed Apr. 17, 1969, Ser. No. 817,133
Int. Cl. B21b *15/00, 31/16*
U.S. Cl. 72—199 **8 Claims**



Disclosed are two embodiments of apparatuses for performing work on metallic slabs to substantially reduce their width. In the first embodiment there is provided a pair of driven slab reducing rolls, each rotatably supported in a housing. The rolls are adjustably positioned relative to each other to reduce the slabs to a desired width. Concentrically carried on each roll are a pair of spaced anvil collars, one of which is adjustably positionable relative to the other to accommodate slabs of different thicknesses. In the second embodiment there is provided a pair of adjustably positionable slab squeezer heads, one of which is reciprocated relative to the other. Pairs of platens adjustably support and locate the slab in a direction normal to the movement of the reciprocating squeezer head.

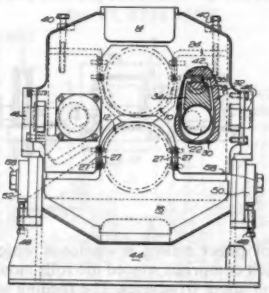
3,580,033
ROLLING MILL FOR PRODUCING THIN STRIP STOCK
Pierre Gay, La Tour en Jarez, France, assignor to Compagnie Des Ateliers Et Forges De La Loire (St. Chamond, Firminy, St. Etienne, Jacob-Holtzer), Paris, France
Filed Feb. 14, 1969, Ser. No. 799,228
Claims priority, application France, Feb. 16, 1968, 1218176
Int. Cl. B21b *39/08, 35/00*
U.S. Cl. 72—205 **11 Claims**

Rolling mill for producing thin strip stock which comprises: a first tension unit acting as a retaining unit, a second tension unit acting as a driving unit, said first and second units comprising each a number of rolls driven at a same peripheral velocity from driving means, said strip to be rolled being passed over said rolls; coupling means arranged between said first and second units and adapted to impart a constant and possibly adjustable value to the ratio of the tangential speeds of said rolls of said first and second units,



means for driving with an adjustable torque the combined mechanism consisting of said first and second tension units, and a four-high stand disposed between said units and provided with work rolls of relatively small diameter rotatably driven by frictional engagement from positively driven supporting rolls.

3,580,034
ROLLING MILLS
Alexander Ian Wilson, Sheffield, England, assignor to The Hille Engineering Company Limited, Sheffield, England
Filed July 30, 1968, Ser. No. 748,716
Int. Cl. B21b *31/00*
U.S. Cl. 72—237 **10 Claims**

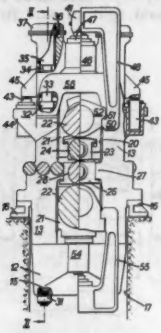


A rolling mill has adjacent roll chocks connected together by a pair of pins extending parallel to the axes of the rolls.

3,580,035
ROLLING MILLS
Harry Laurence Fred Bond, Hathersage; Dennis Stubbs, and Maltby Todwick, Sheffield, all of, England, assignors to Davy and United Engineering Company, Limited, Yorkshire, England
Filed Apr. 5, 1968, Ser. No. 719,135
Int. Cl. B21b *31/16*
U.S. Cl. 72—243 **8 Claims**

A rolling mill stand has two pairs of housing posts, the members of each pair defining a space therebetween for receiving one above the other the chocks for at least two rolls, a separate housing top overlying all four members and which is adjustably displaceable vertically relative to the posts, the top having a pair of parts extending sideways beyond the planes through the pairs of housing posts and means carried by the extended parts for bending the roll supported by the uppermost chock in each of said spaces. The base of the housing posts also has a pair of parts extending

sideways beyond the planes through the pairs of housing posts and means carried by the pair of extended parts for



bending the roll supported by the lowermost chock in each of the spaces.

3,580,036

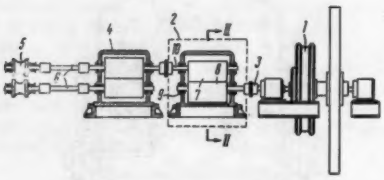
METHOD OF ROLLING ON A PILGER MILL

Iosif Luouich Zayats, Moskovskoi oblasti ulitsa Zhulyabina,3,kv.99, Moskovskoi oblasti ulitsa Zhulyabina,3,kv.99; Vladimir Pavlovich Barabashkin, Moskovskoi oblasti, ulitsa Noginsky proezd,30,kv.21, Elektrostal; Boris Nikolaevich Matveev, Balaklavsky prospekt,24,Korpus 2,kv,157, and Jury Fedorovich Shevakin, Telegrafny pereulok,11/11,kv,53, Moscow, U.S.S.R.

Filed Oct. 15, 1968, Ser. No. 767,678

Int. Cl. B21b *35/00*

U.S. Cl. 72—249 **11 Claims**



A method of pilger rolling is disclosed which employs a pilger mill which comprises spaced die rolls mounted for continuous rotation about fixed axes. The feeding and rolling are effected intermittently step by step. A step of feeding of the successive portion of a blank into the gap between rolls and the next step of rolling this portion are effected during one revolution of the rolls. The directions of blank movement are opposite in feeding and rolling. A device is provided between the drive motor and the rolls to convert the uniform rotation of the drive motor into a periodically varying rotation of rolls. Thus the rotary speed of the rolls is varied periodically within each revolution so that the rate of speed during feeding is lower than that when the feeding is arrested and the successive portion of blank is rolled. Several different forms of device are provided, such as an elliptical gear train, multilink and slide block mechanisms.

3,580,037

TUBE EXTRUSION APPARATUS INCLUDING SEPARABLE ARRESTED MANDREL TIP TUBE CUTOFF

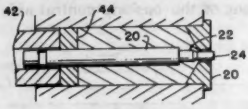
John W. Issott, Dearborn, Mich.; Harold E. Honkala, and Delbert V. Carraher, Decatur, Ala., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 7, 1968, Ser. No. 765,406

Int. Cl. B21c *23/00*

U.S. Cl. 72—255 **7 Claims**

Tube extrusion apparatus employing an arrested mandrel having a separable tip including axially spaced extrusion and cutoff portions. The mandrel tip is substantially smaller than the main mandrel which supports the tip during billet piercing operation resulting in back extrusion of the billet materi-



al. The mandrel is stationary during the extrusion operation and at the completion advances slightly to introduce the tube cutoff portion of the mandrel tip into the extrusion die.

3,580,038

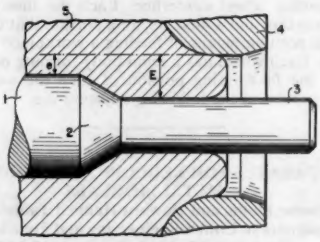
EXTRUSION MANDREL AND METHOD

Jean-Michel Andreassian, Parmain, France, assignor to Compagnie Du Filage Des Metaux Et Des Joints Curty, Paris, France

Filed Apr. 3, 1968, Ser. No. 718,416

Int. Cl. B21c *23/04, 25/00;* **B21b** *17/02*

U.S. Cl. 72—264 **5 Claims**



An improvement in an extrusion mandrel in combination with the cylindrical part of the mandrel that defines the interior contour of the extruded workpieces which includes a short front member of generally cylindrical configuration but having a cross-sectional diameter and a length less than the cylindrical part and a base member joining the front member to the cylindrical part. In use, the mandrel is positioned so that the short front member always cooperates with the die at the beginning of the extrusion.

3,580,039

DEVICE FOR MANUFACTURING BLADES FOR THE BLADE WHEEL OF AN AXIAL FLOW MACHINE

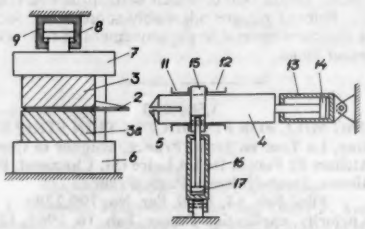
Martti Heinonen, Turku, Finland, assignor to Valmet Oy, Helsinki, Finland

Filed June 20, 1968, Ser. No. 738,547

Claims priority, application Finland, June 21, 1967, 1753/67

Int. Cl. B21d *41/02*

U.S. Cl. 72—316 **5 Claims**



Blades which are to be attached to the blade wheel of an axial flow machine, have a paddle part and an attachment surface which are simultaneously shaped in two molds. One of these molds shapes the paddle part in the desired manner

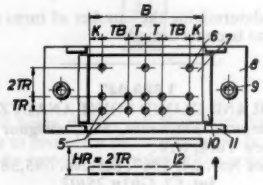
while the other mold imparts the final shape to the attachment surface. Then the two molds with the blade still clamped in them are twisted to produce the desired blade angle.

3,580,040

PROCESS AND TOOL FOR FORMING HOLES IN PROFILED MEMBERS WITH A PREDETERMINED SPACING

Gunther Lang, Triesterstrasse 388, Graz-Puntigam, Steuermark, Austria

Filed Oct. 30, 1968, Ser. No. 771,805
Claims priority, application Austria, Oct. 30, 1967, 9764/67
Int. Cl. B21d *43/28;* **B21c** *37/02;* **B26d** *1/00*
U.S. Cl. 72—324 **7 Claims**



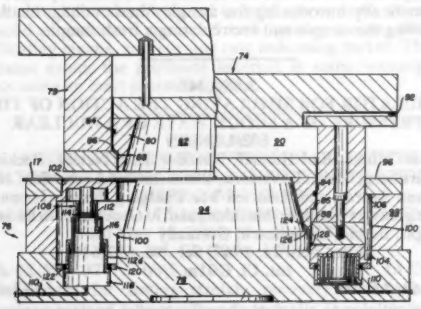
A process is disclosed for providing holes with particular spacing in profiled metal sheets, preferably of steel, wherein the shaping of the sheets follows the formation of the holes in the sheet. The invention contemplates cutting the perforations in the sheet while it is flat and prior to its shaping, such that the spacing between the holes in the longitudinal direction of the sheet is less than the standard spacing to be provided in the shaped member to compensate for the elongation of the sheet in the longitudinal direction during the shaping of the sheet. A tool for punching the holes includes insert members which are adjustable for regulating the reduced spacing of the holes to be punched in the sheet.

3,580,041

DIE ASSEMBLY

Lorenz Tilly, Montreal, and Barrie Bonner, Westmount, Quebec, Canada, assignors to Universal Alufolien Verfahren A.G., Zug, Switzerland

Filed Feb. 5, 1968, Ser. No. 702,901
Int. Cl. B21d *22/22*
U.S. Cl. 72—336 **12 Claims**



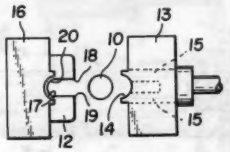
A method and apparatus for forming sheet material, such as light gauge foil, into containers and the like. A punch and die arrangement includes supporting the forming portions of the die assembly by a pressurized fluid such as air so that these portions yieldably conform with precision to the punch surfaces during a forming operation.

3,580,042

WIRE GROOVING METHOD AND MACHINE

David W. Snyder, Hilton, N.Y., assignor to Snyder Specialty, Inc., Hilton, N.Y.

Filed Nov. 12, 1968, Ser. No. 774,751
Int. Cl. B21d *28/00, 31/00;* **B21c** *3/02*
U.S. Cl. 72—339 **8 Claims**



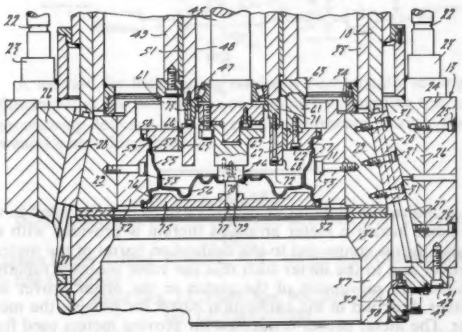
Wire stock is given an encircling, coaxial groove by shearing off a pair of slugs of material along equal and parallel chord planes on opposite sides of the wire axis, and pressing the remaining core of material in the direction of the chord planes first from one side and then the other to form the cylindrical surfaces of the groove. The shearing tool preferably includes a semicylindrical, concave die for forming half the groove surface in the shearing stroke, and a die with a slightly larger diameter semicylindrical surface presses from the opposite direction to complete the groove.

3,580,043

WHEEL ROUNDING MACHINE

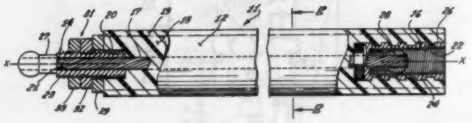
George E. Gollwitzer, Belleville, Mich., assignor to Kelsey-Hayes Company

Filed Oct. 22, 1968, Ser. No. 769,625
Int. Cl. B21d *41/00*
U.S. Cl. 72—402 **7 Claims**



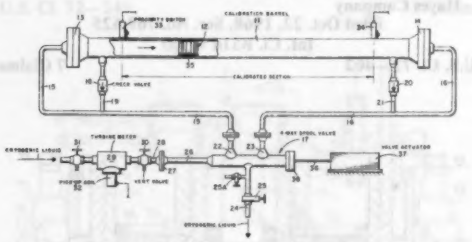
A machine for rounding assembled wheels and for accurately forming and aligning a locating hole in the wheel spider with relation to the rim. The machine includes a plurality of radially movable rounding dies for engagement with the rim of the assembled wheel for rounding the rim. In addition, a forming tool in the form of a rotating cutter is provided for forming and aligning a locating opening in the wheel spider. The forming tool is supported by aligning means that are engageable with the inner periphery of the rim of the wheel when the rounding dies are in their rounding position for accurately aligning the forming tool with respect to the rounded rim. The aligning means comprises a floating backup ring to assist in the wheel rounding operation.

3,580,044
TUBE BENDING MANDREL
Edwin A. De Voss, 2550 Pacific Coast Highway, Torrance, Calif., and Antone M. Guerreiro, 3730 W. 132nd St., Hawthorne, Calif.
Filed Mar. 24, 1969, Ser. No. 809,713
Int. Cl. B21d 9/01
U.S. Cl. 72—466 3 Claims



A mandrel useful in tube bending operations, the mandrel being constructed—for the most part of plastic or like materials—and includes means whereby the mandrel may be reshaped insuring smooth continuous bends therein free of wrinkles corrugations and the like.

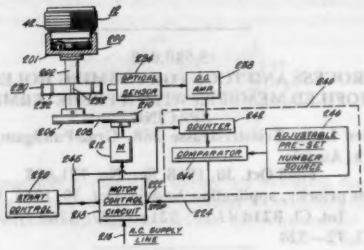
3,580,045
METER PROVER
Raymond H. Pfrehm, Houston, Tex., assignor to Esso Research and Engineering Company
Filed July 16, 1968, Ser. No. 745,256
Int. Cl. G01f 25/00
U.S. Cl. 73—3 15 Claims



A bidirectional meter prover adapted to be connected to a conduit having a meter arranged therein is provided with a valve means connected to the calibration barrel of the meter prover and to the meter such that the valve means is rapidly shifted for movement of the piston in the meter prover in either direction in the calibration barrel for proving the meter. The meter prover is adapted for proving meters used for metering cryogenic liquids with the cryogenic liquid being introduced into the meter proving system and with the cryogenic liquid being vented as the system is cooled to equilibrium temperature; venting is stopped while introduction of cryogenic liquid is continued until thermal equilibrium is reached. Thereafter, the system is operated to prove the meter at equilibrium temperature.

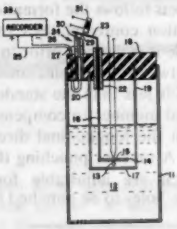
3,580,046
METHOD AND APPARATUS FOR TESTING ROTATION-RESPONSIVE DELAY DEVICES
Oliver F. Cheney, Philadelphia, Pa., assignor to Delaware Valley Armaments, Inc., Mt. Laurel Twp., N.J.
Filed June 13, 1969, Ser. No. 833,007
Int. Cl. F42c 21/00
U.S. Cl. 73—5 8 Claims

Arming delay-devices, suitable for delaying the arming of an artillery shell until it is well away from the gun by which it is fired, are tested in production by rotating each of them in a



test stand and determining the number of turns of the device required for it to become armed.

3,580,047
POUR AND CLOUD POINT ANALYZER
Samuel W. Simpson, Florissant, Mo., assignor to Shell Oil Company, New York, N.Y.
Filed Nov. 24, 1967, Ser. No. 685,587
Int. Cl. G01n 25/02
U.S. Cl. 73—17 6 Claims

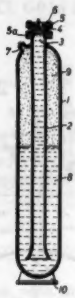


Apparatus for determining the pour point of an oil sample by observing the temperature at which the solidified constituents in the oil sample, upon being heated, will no longer support a small object. This point is indicated by discontinuance in an automatically recorded time/temperature curve during the warning portion of the cycle. The inception point of a plateau in the time/temperature curve during the cooling portion of the cycle is the crystal point. This crystal point correlates with the ASTM cloud point. Modification of the apparatus for continuous service can be accomplished by automatically introducing the sample, then cooling, heating, removing the sample and recirculating a fresh sample.

3,580,048
SIMULATOR FOR SIMULATING THE ACTION OF THE PRESSURE OF A SHOCK WAVE OF A NUCLEAR EXPLOSION
Walter Trinks, Bad Honnef; Theodor Karl Netzer, Pocking-Starnberg; Hans T. Victora, Bliesheim bei Lechenich; Hermann Saurer, and Heinrich Von Paulgerg, Bonn, Germany, assignors to Berliner Mashinenbau A Gvorm. L. Schwartzkopff, Bonn-Tannenbusch, Germany
Filed Feb. 21, 1967, Ser. No. 617,619
Int. Cl. G01m 7/00
U.S. Cl. 73—35 15 Claims

A simulator to simulate the effects of a nuclear explosion and wherein the simulator is adapted to be placed on the object to be tested. The simulator includes an outer housing in which is situated a thrust-producing means for producing a thrust having the nature of a rocket thrust, and a transfer means is carried by the housing for transferring from the latter the reaction of the thrust to the object to be tested. The housing has an opening through which a fluid discharges during action of the thrust-producing means, and this thrust-producing means may take the form of a body of water situ-

ated in the housing and acted upon by air under pressure. A burstable membrane closes the discharge opening of the housing, and an explosive is provided for bursting the membrane or diaphragm so as to release the pressure in the housing, the water being discharged therefrom by the air under pressure so as to provide a thrust which can be transmitted to the object to be tested for simulating the action of a nuclear explosion.

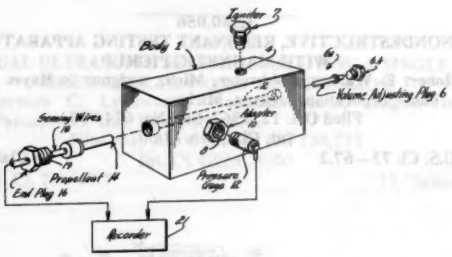


3,580,049

ROCKET BURN RATE TESTING DEVICE

Lonnie D. Cardwell, Irving; Fred T. Esenwein, and Arthur E. Pierard, Arlington, Tex., assignors to The United States of America as represented by the Secretary of the Navy

Filed July 25, 1968, Ser. No. 750,426
Int. Cl. G01n *33/22*
U.S. Cl. 73—35 **1 Claim**



A closed chamber designed to hold one or more strands of a solid propellant is equipped with igniting means, pressure indicating means, and burning rate indicating means. The apparatus avoids the problems inherent in static burning rate tests using an inert pressurizing gas.

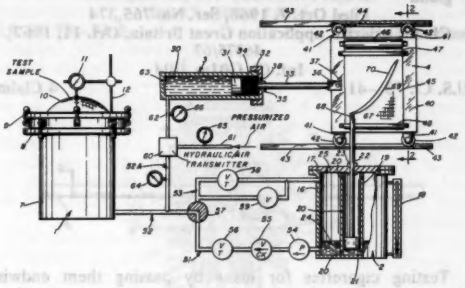
3,580,050

TESTING DEVICE FOR STRETCHABLE SHEET MATERIALS UNDER SIMULTANEOUS DISTORTION IN THREE DIMENSIONS

Paul H. R. Waldron, 175 Jupiter Point Road, Groton, Conn.

Filed May 19, 1969, Ser. No. 825,856
Int. Cl. G01m *3/02*
U.S. Cl. 73—37 **13 Claims**

Apparatus for testing stretch, recovery and hysteresis characteristics of fabrics particularly useful for elastic fabrics of type used in foundation garments and brassieres, including multidirectionally stretchable isotropic or nonisotropic fabrics. Test sample is secured against an elastomeric diaphragm which is progressively inflated to distort sample in three dimensions while measuring volumetric change in relation to force applied. Device also plots relationship of force to dimension change in sample in any desired direction or directions. Both volumetric and dimensional changes are also plotted to show recovery characteristics of fabric during deflation of diaphragm. Repeated tests on same sample show hysteresis characteristics thereof. Device also useful with



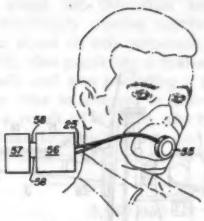
paper, felts or other sheet material to test stretch and/or bagging and/or bursting characteristics.

3,580,051

METHOD FOR LEAK TESTING MASKS

William V. Blevins, Joppa, Md., assignor to the United States of America as represented by the Secretary of the Army

Division of Ser. No. 662,209, Aug. 21, 1967, Pat. No. 3,504,542. application Oct. 3, 1969, Ser. No. 871,119
Int. Cl. G01m *3/26*
U.S. Cl. 73—40 **1 Claim**



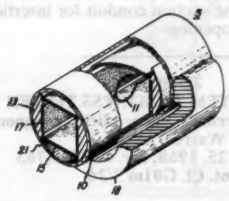
A method for leak testing masks by hermetically sealing a flowmeter at the mouth area of the mask undergoing test and monitoring leakage due to external pressure during mask wearer's breathing function.

3,580,052

DISCHARGE GAGE FOR HELIUM LEAK DETECTOR USE

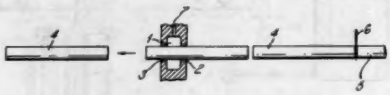
James Roger Young, Rexford, N.Y., assignor to General Electric Company

Filed Oct. 23, 1969, Ser. No. 868,877
Int. Cl. G01m *3/04*
U.S. Cl. 73—40.7 **6 Claims**



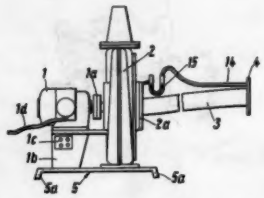
A Penning-type discharge gage for a leak detector using a mass spectrometer and helium as a probe gas uses graphite cathodes to eliminate the helium memory associated with cathodes consisting of other materials.

3,580,053
CIGARETTES TESTING
Desmond Walter Molins, Deptford, London, England, assignor to Molins Machine Company Limited, London, England
Filed Oct. 7, 1968, Ser. No. 765,374
Claims priority, application Great Britain, Oct. 11, 1967, 46375/67
Int. Cl. G01m 3/04
U.S. Cl. 73—41 4 Claims



Testing cigarettes for leaks by passing them endwise through a suction chamber which draws air from atmosphere through the end of a cigarette and through its wrapping and the pressure of which fluctuates according to the air flow.

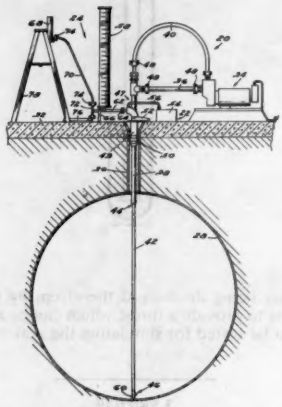
3,580,054
APPARATUS FOR DETECTING LEAKS IN HOLLOW BODIES
Hermann Schlumbaum, Wennigsen, Deister, Germany, assignor to Stephan-Werke GMBH & Co., Hamelor/Weser, Germany
Filed Oct. 4, 1968, Ser. No. 765,078
Claims priority, application Germany, Oct. 5, 1967, P 16 48 736.8
Int. Cl. G01m 3/26
U.S. Cl. 73—49.2 7 Claims



Apparatus for detecting the presence or absence of leaks in bodies of automotive vehicles comprises a frame which supports an electric motor serving to drive a suction generating device whose inlet is connected with a suction conduit. The latter can be placed against the opening of an automobile body to evacuate air, and a gauge, U-tube or analogous measuring device is provided to determine the pressure in the opening and/or in the suction conduit to thereby indicate the presence or absence of leaks. The frame may be provided with legs and/or wheels so that it can be readily transported between storage and one or more locales of use. The frame is further provided with means for storing the suction conduit, for storing the conductor which supplies current to the motor, and/or for storing nozzles one of which can be coupled to the intake end of the suction conduit for insertion into or for placing against an opening.

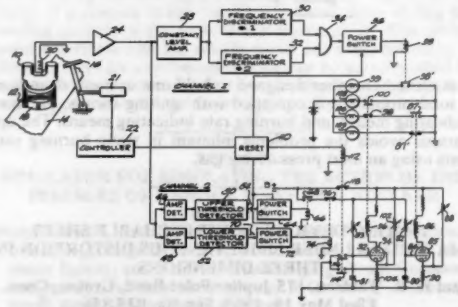
3,580,055
TANK SYSTEM TIGHTNESS TESTER
Richard B. White, Orchard Lake, Mich., assignor to Kent-Moore Corporation, Warren, Mich.
Filed Oct. 25, 1968, Ser. No. 770,763
Int. Cl. G01m 3/26
U.S. Cl. 73—49.2 15 Claims

This disclosure relates to a test apparatus for measuring the tightness of tanks, such as underground fuel storage tanks, and a method of performing the test. The apparatus includes a temperature sensing device adapted to measure the temperature of the fluid within the tank, a means to establish a fluid head in communication with the fluid in the tank to measure the change in volume of fluid in the system during the test period, and a fluid circulating system which continuously circulates fluid from the tank and back to equalize the temperature of the fluid in the tank, and permit accurate



compensation for temperature variations in the system. In the disclosed embodiment, a means is provided to adjust the height of the fluid head to stabilize the deflection of the walls of the tank.

3,580,056
NONDESTRUCTIVE, RESONANT TESTING APPARATUS WITH MAGNETIC PICKUP
Robert F. Warner, Coldwater, Mich., assignor to Hayes Albion Corporation, Jackson, Mich.
Filed Oct. 12, 1967, Ser. No. 674,798
Int. Cl. G01h 13/00
U.S. Cl. 73—67.2 3 Claims



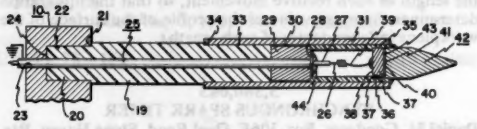
A casting under test is placed in a magnetic field and struck with a hammer causing the casting to vibrate at its resonant frequency. There is a pickup coil disposed in the field to sense variations thereof caused by vibration of the casting. The pickup coil develops a test signal whose frequency and amplitude represent the vibration of a casting. The test signal is processed via a frequency discrimination circuit and a decay rate detection circuit to ascertain when the vibration frequency and the vibration decay rate are acceptable.

3,580,057

PROBE DEVICE USABLE IN MEASURING STRESS

Ben L. Seegmiller, Salt Lake City, Utah, assignor to The University of Utah, Salt Lake City, Utah

Filed June 19, 1969, Ser. No. 834,834
Int. Cl. G01n 29/00
U.S. Cl. 73—67.6 2 Claims



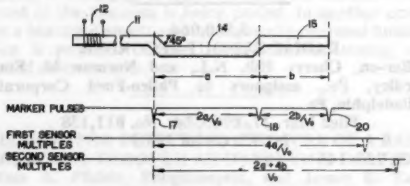
A probe device for use with stress-measuring apparatus and having plural probes provided with mutually and, in one form of the invention, variably spaced tips. These tips preferably comprise parallel, chisel-contact tips. Transducers such as piezoelectric crystals are respectively operatively associated with said tips, with the intercoupling areas of the crystals and coaxial cable conductors coupled thereto being constructed to provide maximum shielding of such areas against external electromagnetic-wave or other interference. The rearward face of each crystal is connected by highly flexible conductor means to the central conductors of the coaxial cables. The forward faces of the respective crystals are preferably grounded through the tips and the jackets electrically connected thereto to the coaxial shields of the cables. Central members or plugs are employed to connect the shield to its respective jacket and at the same time isolate the crystal-connector junction areas.

3,580,058

DUAL ULTRASONIC SENSORS EMPLOYING A SINGLE MODE OF ULTRASONIC TRANSMISSION

Lawrence C. Lynnworth, Waltham, Mass., assignor to Panametrics, Inc., New York, N.Y.

Filed May 21, 1968, Ser. No. 730,713
Int. Cl. G01n 29/00
U.S. Cl. 73—67.7 13 Claims



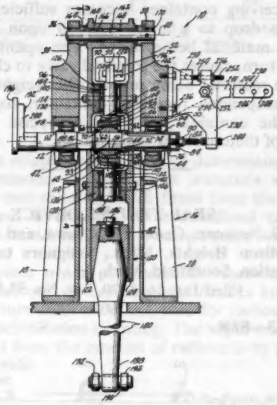
An ultrasonic measuring system for determining ambient conditions on two sensing elements. The elements may be positioned either to respond to a distribution in space of one ambient condition or to respond to two different ambient conditions in the same area. An ultrasonic transducer produces waves in only one ultrasonic mode, which are coupled to two sensors by means of a single lead-in element. The relative acoustic impedances of the sensors and their dimensions in a direction of propagation of the ultrasonic waves are such that the reflection pulses generated at each end of each of the sensors are identifiable with those ends of the sensors based upon their distribution in time, or their polarity or both. These dimensions and relative impedances are controlled so that reverberation pulses do not create an ambiguity and the identification of the primary marking pulses are generated at each end of the sensors.

3,580,059

SPHERICAL BEARING TESTER

Robert Barry Dalton, Monroe, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Jan. 13, 1969, Ser. No. 790,645
Int. Cl. G01m 13/04
U.S. Cl. 73—71.5 26 Claims



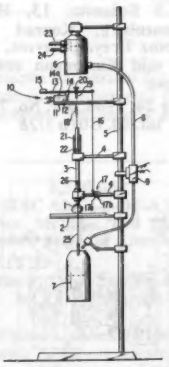
A spherical bearing tester providing oscillatory rotating motion of the inner bearing race with respect to the outer bearing race about the thru-shaft longitudinal axis, also providing an oscillatory relative motion between the outer and inner races about an axis perpendicular to the thru-shaft longitudinal axis, also providing a bearing load along the axis of the thru-shaft, and also providing a bearing load so as to cause the outer race to attempt to move with respect to the inner race as a result of a force which is perpendicular to both the thru-shaft longitudinal axis and the axis about which the outer race oscillates with respect to the inner race.

3,580,060

HARDNESS TESTER

Joseph E. Huskey, Copperhill, Tenn., assignor to Cities Service Company

Filed Oct. 24, 1968, Ser. No. 770,150
Int. Cl. G01n 3/18, 3/08
U.S. Cl. 73—78 4 Claims



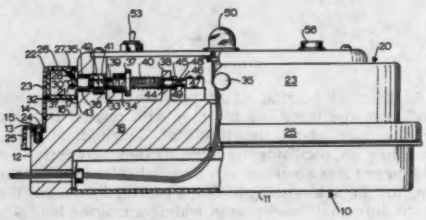
The hardness of crushable materials is determined by an apparatus capable of applying a uniformly increasing compression force to the material undergoing test. This force is

applied by a plunger exerting a downward pressure on the crushable material and by the weight of a receiving container suspended from the plunger. During the test, the weight exerted by the suspended container is continuously and uniformly increased by the flow of fluid from a reservoir tank into the receiving container. The flow of fluid is commenced by the opening of a normally closed solenoid valve in response to the closing of a relay switch. This switch is adapted to assume an open position when the weight of fluid in the receiving container becomes sufficient to cause the plunger to drop to a lower position upon crushing of the crushable material being tested. The opening of the relay switch, in turn, causes the solenoid valve to close upon crushing of the material being tested. The weight of the plunger and the suspended receiving container, together with the fluid in the container, provides a precise measure of the hardness of the crushable material.

3,580,061
SEAL-TESTING DEVICE

William H. Neuman, Cedar Falls, Iowa, and James A. Repella, Madison Heights, Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Jan. 16, 1970, Ser. No. 53,333
Int. Cl. G01n *3/08*
U.S. Cl. 73—88R **3 Claims**

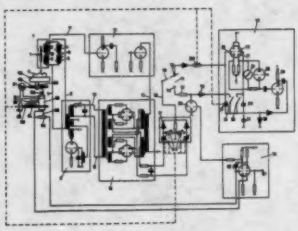


A device for indicating whether a lip-type seal may be satisfactorily reinstalled. A simulated shaft and seal retaining environment is provided, and the simulated shaft has a plurality of radially extending members normally urged radially outwardly at a predetermined pressure. When the seal urges all of these members in at a somewhat greater pressure, a series circuit is completed to give a signal. The seal is deemed satisfactory if the signal remains in operation for a predetermined time interval.

3,580,062
SURFACE-MEASURING DEVICE

Johannes Perthen, 3 Sedanstr. 13, Hannover; Werner Gerighausen, Ronnenberg; Konrad Kunzmann, Rollinghausen, and Heinz Dreyer, Devese, Germany assignee said Gerighausen, said Kunzmann and said Dreyer assignors to said Perthen

Filed July 24, 1968, Ser. No. 747,317
Int. Cl. G01b *5/28*
U.S. Cl. 73—105 **2 Claims**



The device comprises mechanism for moving relative to one another a workpiece and a feeler point contacting the surface of the workpiece. An electromechanical transducer is mechanically connected to the feeler point for converting into electrical signals the movements of the feeler point normal to the surface of the workpiece, and is electrically connected through an amplifier to an electrical integrator for integrating such electrical signals. A device for determining the length of the relative movement of the workpiece and feeler point is connected to apparatus for determining the magnitude of the electrical signals integrated by the integrator, to vary the magnitude of the integrated signals inversely with the length of such relative movement, so that the integration determines the mean value of the profile of the surface of the workpiece independently of such length.

3,580,063
SYNCHRONOUS SPARK TIMER

Daniel M. Goodnow, Box 306F, Opel Road, Stone Haven, Rte. 1, Glen Burnie, Md.

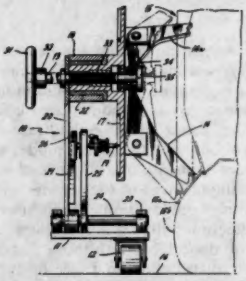
Filed Apr. 11, 1969, Ser. No. 815,449
Int. Cl. G01m *15/00*
U.S. Cl. 73—118 **3 Claims**

A test harness and spark electrode arrangement is provided for facilitating the timing of electrical ignition gas engines. A permanent magnet allows the electrode to be positioned anywhere on the engine block and is especially useful in conjunction with the flywheel or cam gear timing mark where the spark can be made to appear at only the correct timing interval.

3,580,064
RADIAL RUNOUT RECORDER

Ari Bar-on, Cherry Hill, N.J., and Norman M. Emslie, Yardley, Pa., assignors to Philco-Ford Corporation, Philadelphia, Pa.

Filed Mar. 27, 1969, Ser. No. 811,138
Int. Cl. G01m *17/02*
U.S. Cl. 73—146 **4 Claims**



Apparatus for recording "radial runout" of a loaded automobile wheel and tire combination. Linkage is provided to

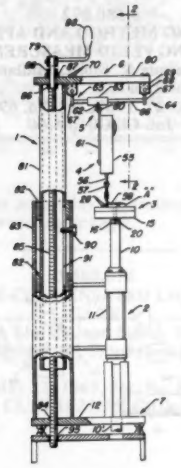
measure the radial runout while the wheel is under normal load, and includes a device—such as an elongate indicator-pen arm—to multiply the measurement. The multiplied value is recorded on a chart secured to the wheel and concentric therewith.

3,580,065

LAMINATE BOND PEELING STRENGTH TESTER

David J. Strittmater, and Nicholas W. Voelker, La Crosse, Wis., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed May 7, 1969, Ser. No. 822,558
Int. Cl. G01n *19/04*
U.S. Cl. 73—150 10 Claims



An apparatus for testing of laminate bonds having in a preferred embodiment a vacuum plate holddown device attached to a vertically movable fluid power-operated piston. A tension gage and clamping device is suspended above the piston and is free to move in a horizontal plane. The vacuum plate holds the sample in position while the clamping device is attached to a turned up strip of laminate. While being held in this position, the piston is moved downward at a fixed rate of speed, and the gage is read indicating the amount of forces exerted as the laminate is being peeled. In another embodiment a heating element and mechanically operated holddown device is provided therein to provide for testing under elevated temperatures.

3,580,066

METHOD FOR DETECTING EXPOSURE OF A BASE MATERIAL THROUGH AN OVERLYING COATING

William A. Pliskin, Poughkeepsie, and James E. Taylor, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 19, 1969, Ser. No. 834,884
Int. Cl. G01n *13/00*
U.S. Cl. 73—150 6 Claims

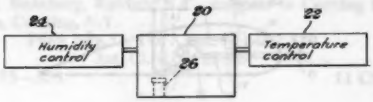
The method for determining the completeness of etching of an oxide from a silicon semiconductor device discloses that bare silicon surfaces are hydrophobic while clean freshly etched oxide surfaces are hydrophilic. To determine whether the silicon is exposed, and therefore free of any oxide film subsequent to etching, the device is cooled and subjected to a stream of moist gas and observed under a microscope. If the etching process by which small holes are formed is incomplete, oxide will remain in the hole and therefore a film of condensed water will form in the holes indicating incomplete etching. If the etching process has been properly completed in the holes, bare silicon will remain causing the moisture to form in small droplets. The form of the moisture can be observed through the microscope.

3,580,067

METHOD OF DETERMINING THE RATE OF VAPOR TRANSMISSION THROUGH SHEET MATERIALS

Melford E. Mandrell, and Wayne W. Blaser, Midland, Mich., assignors to The Dow-Chemical Company, Midland, Mich.

Filed Nov. 2, 1967, Ser. No. 680,128
Int. Cl. G01n *15/08*
U.S. Cl. 73—159 1 Claim



This invention relates to a method of determining the rate of vapor transmission through sheet materials wherein a defined area of test sheet material fitted over the end of a bottlelike element is exposed to standardized radioactive water under constant conditions of temperature and humidity.

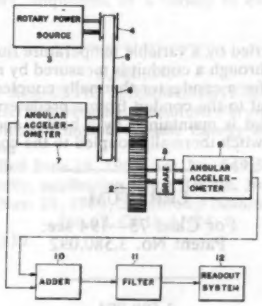
Radioactive water which penetrates the test sheet is, for example, absorbed on calcium chloride. After a known time interval the calcium chloride is analyzed for radioactivity by means of liquid scintillation counting. The vapor transmission rate is calculated from the amount of radioactivity present in the calcium chloride.

3,580,068

APPARATUS FOR TESTING ROTARY POWER TRANSMITTING COMPONENTS

Louis S. Hoodwin, Rte. 1, Box 246, Sawyer, Mich.

Filed Aug. 26, 1968, Ser. No. 755,361
Int. Cl. G01m *13/02*
U.S. Cl. 73—162 5 Claims



This invention describes apparatus for testing rotary power transmitting components by measuring the differential angular accelerations between the inputs and outputs of such components.

3,580,069

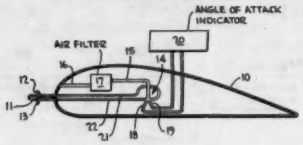
SUBSONIC FLUIDIC ANGLE-OF-ATTACK SENSOR

Raymond W. Warren, McLean, and Elmer L. Swartz, Annadale, Va. The United States of America as represented by the Secretary of the Army

Filed June 9, 1969, Ser. No. 831,526
Int. Cl. G01c *21/00*
U.S. Cl. 73—180 11 Claims

A fluidic angle-of-attack indicator for subsonic aircraft is disclosed. Two sensing tubes are located in that portion of the stagnation region of the wing of the aircraft where the flow separates and are used to control the output position of the power jet of a proportional fluid amplifier. As the angle of attack changes the rate of fluid entrainment from each of the sensing tubes changes and causes deflection of the power jet. The source of fluid for the power jet is derived from a

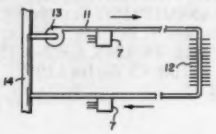
ram tube located on the wing surface, with an air filter being positioned between the power jet and the open end of the ram tube. The readout consists of a piston-type float which is responsive to a fluid pressure differential on its opposing sides. A side-slip indicator, using the above arrangement, is



provided by rotating the sensing tubes 90° and locating them in the stagnation region of the aircraft's vertical stabilizer.

The invention described herein may be manufactured, used, and licensed by or for the United States Government for governmental purposes without the payment to us of any royalty thereon.

3,580,070
HEAT METER
Edward H. Cumpston, Jr., 43 Monument Ave., Old Bennington, Vt.
Filed July 11, 1968, Ser. No. 744,000
Int. Cl. G01n *1/00*
U.S. Cl. 73—193 **9 Claims**

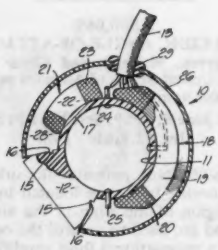


The heat carried by a variable temperature fluid moving at a known rate through a conduit is measured by recording the time required for a conductor thermally coupled to the conduit to lose heat to the conduit from a predetermined higher temperature that is maintained by a heater and a temperature-sensitive switch thermally coupled to the conductor.

ERRATUM

For Class 73—194 see:
Patent No. 3,580,092

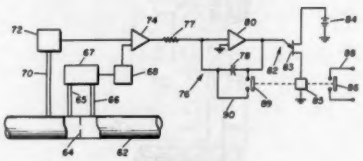
3,580,071
FLOWMETER PROBE
Norman A. Hickman, Ventura, Calif., assignor to Statham Instruments Inc., Oxnard, Calif.
Filed Feb. 26, 1969, Ser. No. 802,517
Int. Cl. G01p *5/08*
U.S. Cl. 73—194 **9 Claims**



An insulative hollow cylindrical tube of inner bore sufficient to accommodate a blood vessel under test, has a longitudinal wedge-shaped portion that is removable to provide an access opening. A first magnetizing coil includes a core that extends circumferentially about the insulative cylinder of substantial angular extent. A second coil has a core extending in the same direction, but of substantially less angular extent than the core of the first coil. The two coils are serially related and energized to induce a potential in the flowing blood which is measured by electrodes carried by the insulative cylinder. The entire assembly is enclosed with a further cover cylinder concentrically arranged about the first coil and end plates.

The present invention relates generally to a blood flowmeter, and, more particularly, to a probe for mounting about a blood vessel to measure the flow rate of blood passing therethrough.

3,580,072
TIME AVERAGING METHOD AND APPARATUS FOR OBTAINING FLUID MEASUREMENTS
John B. Cox, and Jacque R. Stoltz, Midland, Tex., assignors to Mobil Oil Corporation
Filed Dec. 27, 1967, Ser. No. 693,867
Int. Cl. G01p *5/00*
U.S. Cl. 73—205 **5 Claims**

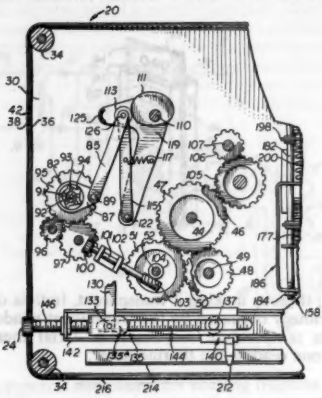


This specification discloses a method and apparatus for accumulating signals from a water-cut monitor and a flow meter in a form whereby the net oil and net water in an oil-water mixture may be determined. A flow meter signal in the form of constant-amplitude, frequency-variable DC pulses is applied to a capacitor to charge the same. A signal from the water-cut monitor is modulated in proportion to the meter signal in order to produce a modulated signal of DC pulses in which pulse amplitude is proportional to water content and pulse frequency is proportional to flow rate. This modulated signal is stored on another capacitor. Both capacitors are interrogated at periodic time intervals in order to obtain readout signals representative of the charges thereon and the capacitors are discharged. Also disclosed is a system for obtaining gas flow information. In this system a pressure signal is modulated in proportion to a ΔP signal to produce a modulated signal of DC pulses which is applied to a capacitor. The capacitor is interrogated as described above.

3,580,073
TEMPERATURE COMPENSATOR
Howard E. Siebold, Libertyville, Ill., assignor to Liquid Controls Corporation, North Chicago, Ill.
Filed June 3, 1968, Ser. No. 733,995
Int. Cl. G01f *3/02*
U.S. Cl. 73—233 **14 Claims**

A temperature compensator modifies the output from a volumeter to compensate for the effect of temperature changes on the volume of a fluid being metered and includes a differential gear train having an output shaft that rotates at a speed equal to the rotational speed of one of its inputs, which is dependent on the volume of the fluid being measured, minus the rotational speed of its other input, which is dependent on the difference in temperature between the temperature of the fluid being metered and a standard temperature. The temperature-dependent input is controlled by a

pair of reciprocating linkages, which are pivotally connected to a bellcrank, which pivots in response to a temperature-

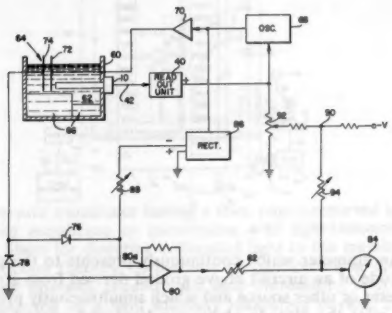


sensing device, for adjustably controlling the length of the stroke of the reciprocating linkages.

3,580,074
TEMPERATURE-COMPENSATED LIQUID QUANTITY GAGE

Vernon C. Wescott, Lincoln, and Sidney B. Williams, Lexington, Mass., assignors to Trans-Sonics, Inc., Lexington, Mass.

Filed May 23, 1969, Ser. No. 827,276
Int. Cl. G01f *23/26*; G01k *7/12*
U.S. Cl. 73—304C **6 Claims**



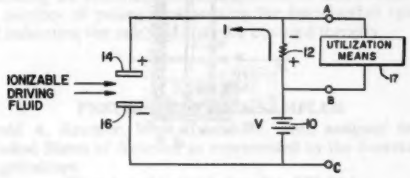
A temperature sensor comprises the usual "hot" thermocouple junction exposed to the temperature to be monitored, a reference junction, a thermally sensitive resistor connected to compensate for changes in the temperature of the reference junction and a readout unit that converts the outputs of these elements to a temperature indication. The reference junction and the resistor are located in the probe that contains the hot junction, so that the leads extending from the probe to the readout unit need not be made of the materials of which the thermocouples are made. The thermally sensitive resistor is in series with the hot junction and reference junction. This permits the use of a single pair of leads to carry current for the resistor and, at the same time, bring back to the readout unit a net voltage comprising the thermocouple junction voltages and the compensating voltage from the resistor.

A capacitive-type liquid quantity gage extending partway down into a tank includes a capacitive liquid level sensor and a temperature sensor positioned to sense the temperature of the liquid monitored by the level sensor. The output of the temperature sensor controls the drive voltage to the level sensor so as to compensate for changes in density and dielectric constant resulting from temperature changes in the liquid. The resulting compensated signal is further adjusted by subtracting from it a signal derived from the temperature sensor to account for expansion or contraction of the liquid below the bottom of the level sensor.

3,580,075
PRESSURE TRANSDUCER FOR IONIZABLE FLUIDS

David R. Steinberg, Raleigh, N.C., assignor to Corning Glass Works, Corning, N.Y.

Filed July 31, 1967, Ser. No. 657,370
Int. Cl. B21d *28/00*
U.S. Cl. 73—339 **11 Claims**

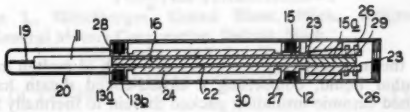


A pressure transducer for ionizable fluids having no vibrating or moving parts and capable of reliable operation at high ambient temperatures is disclosed. The driving fluid to be detected is introduced into a space between a pair of electrodes across which an ionizing electrical potential exists. Ionic current flow between the transducer electrodes is a function of the instantaneous density of the driving fluid within the interelectrode space and produces corresponding current and voltage drops in an external circuit of sufficient intensity to drive detectors, amplifiers, or a variety of electrical instruments.

3,580,076
ACOUSTIC THERMOMETERS

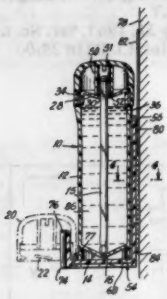
Eric George Herbert Mobsby, Blandford Forum, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed June 28, 1967, Ser. No. 649,516
Claims priority, application Great Britain, June 29, 1966, Nov. 21, 1966, 29316/66;52098/66
Int. Cl. G01k *11/24*
U.S. Cl. 73—339 **2 Claims**



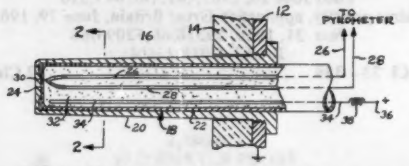
A thermometer which measures temperature by the time taken by a sound pulse to travel along a probe. The sound pulse emanates from a transducer coil and magnetostrictive element and travels in two opposite directions. One direction is toward a terminal mass polarized by a magnet where the sound is reflected by the terminal mass and so phased to increase the pulse width at the point of emanation. The other direction of the pulse is toward a probe by way of the magnetostrictive element itself and a transmission line. Reflections from the two ends of the probe are sensed and the time between the reflected pulses from the ends of the probe is measured as function of temperature. The magnetostrictive element is preferably twisted along its length.

3,580,077
CLINICAL THERMOMETER STORAGE AND STERILIZING APPARATUS
Seymour N. Blackman, 3 Horizon Road, Penthouse #4, Fort Lee, N.J.
Filed Nov. 18, 1968, Ser. No. 776,363
Int. Cl. G01k 1/00, 1/14; A61l 3/00
U.S. Cl. 73—343 10 Claims



A thermometer storage container is cylindrically shaped and longitudinally ribbed along its outer surface. The ribs engage resilient gripping flanges on a wall bracket permitting the container to be snapped forwardly into the bracket and axially withdrawn therefrom. A drip proof cover engages a diaphragm at the upper end of the container and encases the upper portion of a thermometer which projects through the diaphragm. The lower portion of the thermometer within the container below the diaphragm is immersed in propylene glycol which functions as a cold-sterilizing solution and additionally acts as a lubricant for rectal insertion of the thermometer.

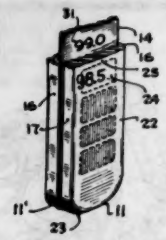
3,580,078
THERMOCOUPLE FAILURE INDICATING DEVICE
Douglas James MacKenzie, Park Ridge, Ill., assignor to American Standard Inc., New York, N.Y.
Filed Apr. 16, 1969, Ser. No. 816,752
Int. Cl. G01k 1/08, 7/02
U.S. Cl. 73—344 4 Claims



A thermocouple for immersion in a bath of molten metal, or other liquid, comprising a closed-ended sheath having crushed ceramic insulation packed therein to thermally insulate certain hot junction wires contained within the sheath. A special auxiliary conductor is arranged within the sheath to energize an alarm circuit should a rupture develop in the sheath wall. Such rupture causes the molten metal to saturate the ceramic and electrically connect with the conductor for developing the alarm signal.

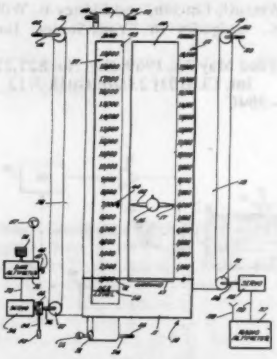
3,580,079
THERMOMETER INDICATOR
Nelson A. Crites, and Donald H. Lyons, Columbus, Ohio, assignors to Abbott Laboratories, North Chicago, Ill.
Filed Mar. 6, 1969, Ser. No. 804,878
Int. Cl. G01k 11/06; G02b 5/24
U.S. Cl. 73—358 9 Claims

A disposable clinical thermometer contains a temperature responsive material within a cell having a viewing window. The window is made translucent by abrading or roughening its inner surface to diffuse light passing therethrough. When a predetermined temperature is reached, the material melts, spreads over and wets the roughened surface to optically



smooth it, thereby making it transparent. Indicia of temperature, previously obscured by the translucent window and the solid state temperature responsive material then becomes visible to one reading the thermometer.

3,580,080
FULL DATA ALTIMETER DISPLAY
Earl Stuart Perkins, Oak Brook, Ill., assignor to Butler National Corporation, Minneapolis, Minn.
Filed Feb. 4, 1969, Ser. No. 796,491
Int. Cl. G01l 7/20
U.S. Cl. 73—384 9 Claims

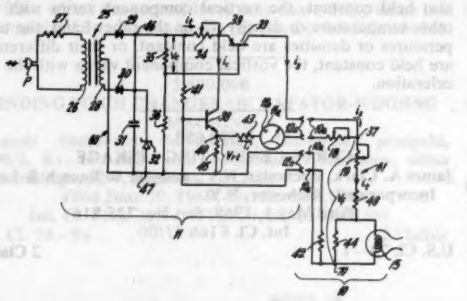


An altimeter which continuously presents to the pilot the altitude of an aircraft above ground derived from a radio altimeter or other source and which simultaneously presents to the pilot the altitude above sea level and ground obtained from a barometric altimeter. Means are provided for adjusting the reference on the barometric altimeter presentation so that the altitude of the terrain will be indicated.

3,580,081
VACUUM GAUGE
Sol Greenberg, Roslyn; Heinz Rosen, Hicksville; Richard Weinberger, Oceanside, and Guy Mongodin, Huntington, N.Y., assignors to Veeco Instruments, Incorporated, Plainview, N.Y.
Filed Sept. 10, 1969, Ser. No. 856,686
Int. Cl. G01l 21/12
U.S. Cl. 73—399 18 Claims

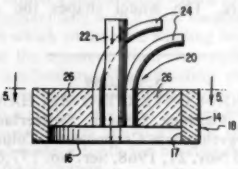
Disclosed herein is a Pirani-type pressure gauge having a sensor head incorporating a pressure-responsive filament, a calibrated pressure indicator, and related circuitry for converting the voltage drop across the filament into a meaningful pressure indication. The net current supplied to the filament includes both an energizing component and an indicator drive component. This net current is maintained constant by a constant current source so that, excluding ambient temperature affects, the voltage across the filament is indicative

of filament resistance and consequently ambient pressure, notwithstanding the effect of the indicator. Temperature effects are minimized by a simple compensating impedance in the filament-indicator circuit which also includes scale-



calibration controls and means for shaping filament response. The calibration, compensation, and shaping components are located in the filament sensor head in such a manner as to obviate the usual field adjustments required to match the sensor head and indicator.

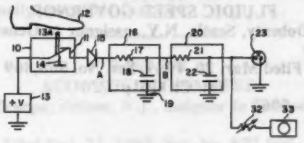
3,580,082
PRESSURE TRANSDUCER
Richard R Strack, Sturbridge, Mass., assignor to The Bendix Corporation, Detroit, Mich.
Division of Ser. No. 673,578, Oct. 9, 1967, Pat. No. 3,503,116, Mar. 31, 1970.
application Nov. 7, 1969, Ser. No. 871,264
Int. Cl. G01l *7/08*
U.S. Cl. 73—406 **9 Claims**



A pressure transducer having a thin, edge-supported light-reflecting membrane or membranes with light-transmitting optical fibers for directing collimated light to the membrane for reflection thereby. A plurality of light-receiving optical fibers are disposed around each light-transmitting fiber and are connected to a light intensity measuring device. Upon membrane deflection, the direction of light reflected therefrom is changed, thereby changing the amount of light incident on the light-receiving fibers. The resultant change in light intensity transmitted to the measuring device serves as a measure of the membrane deflection and therefore the pressure acting thereon.

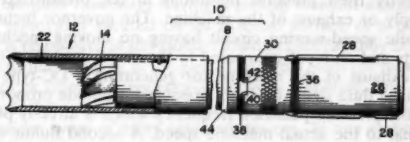
3,580,083
SPEED-MEASURING DEVICE
Frederick S. Zipser, 32 S. Broadway, Red Hook, N.Y.
Filed Dec. 18, 1968, Ser. No. 784,859
Int. Cl. G01l *3/00, 5/02*
U.S. Cl. 73—432R **6 Claims**

A device for measuring the rate of speed or distance covered by a person moving or running in place including a generator producing an electrical pulse each time a football is made, a device for calculating the rate at which the pulses occur, and a device for indicating the calculated rate. For distance measurements, a preset distance-factoring device can be adjusted so as to provide an indication of the distance covered between successive electrical pulses in accordance with the characteristic of the moving individual, and a counting device for counting up the number of electrical pulses in accordance with the factor. In an alternative embodiment, high-frequency generators can be used along with a counting device for digitally accumulating electrical pulses in ac-



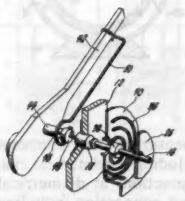
cordance with the interval between footfalls; and a device for producing an electrical pulse amplitude in accordance with the number of pulses representing the intrafootfall spacing, and indicating the rate and distance covered thereby.

3,580,084
PNEUMATIC PROBE SAMPLER
Harold A. Kramer, West Hyattsville, Md., assignor to The United States of America as represented by the Secretary of Agriculture
Filed Jan. 24, 1966, Ser. No. 522,784
Int. Cl. G01n *1/14*
U.S. Cl. 73—421 **3 Claims**



A pneumatic probe for taking samples of grain and other particulate material from the bottom of a bin comprises two concentric tubes spaced sufficiently apart to permit passage of the material when entrained in a stream of air. The outer longer tube has a serrated edge to enable it to penetrate dense sections, while the inner, shorter tube is provided with helical vanes. Air, blown down the outer tube is caused to swirl in a vortex by the helical vanes, thereby entraining material lodged near the bottom of the outer tube. The air, together with entrained material, passes up the inner tube and is conducted to a cyclone separator to recover the sample.

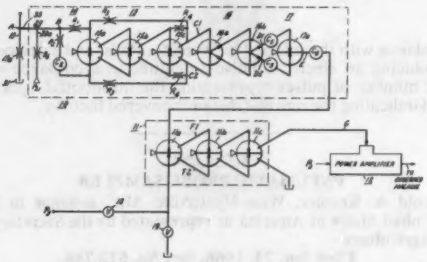
3,580,085
POINTER STABILIZER
Alan L. Hitzelberger, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed June 2, 1969, Ser. No. 829,585
Int. Cl. G01p *1/08;* **G01d** *11/10*
U.S. Cl. 73—496 **1 Claim**



The invention relates to a speedometer. The following specification describes a speedometer having an improved indicating mechanism. The hub of the indicating needle is

machined to act as a bearing on the spindle, and the needle and spindle are interconnected by a damping member to filter out oscillations occurring in the pointer.

3,580,086
FLUIDIC SPEED GOVERNOR
Martin C. Doherty, Scotia, N.Y., assignor to General Electric Company
Filed Mar. 20, 1969, Ser. No. 808,869
Int. Cl. G01p *3/26*
U.S. Cl. 73—506 **7 Claims**

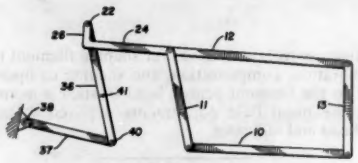


A fluidic speed governor for controlling the speed of pneumatic or hydraulic machines senses the machine speed directly from pressure pulsations in the pressurized fluid supply or exhaust of the machine. The governor includes a fluidic speed-sensing circuit having no moving mechanical parts and an input connected to the pressurized fluid supply or exhaust of the machine for generating a DC-type pressurized fluid signal having a pressure magnitude proportional to the pressure pulsation frequency which is directly proportional to the actual machine speed. A second fluidic circuit connected to the output of the first circuit is provided with a speed reference input signal and generates a pressurized fluid signal indicative of the deviation of the actual machine speed from the reference speed. A fluid power amplifier connected to the output of the second circuit develops a pressurized fluid flow for controllably driving the governed machine.

3,580,087
FLUID ACTUATED INSTRUMENT SENSITIVE TO DENSITITY TEMPERATURE OR LINEAR ACCELERATION
Richard L. Sampson, Excelsior, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 21, 1968, Ser. No. 777,833
Int. Cl. G01p *15/00*; G01k *1/00*
U.S. Cl. 73—515 **10 Claims**

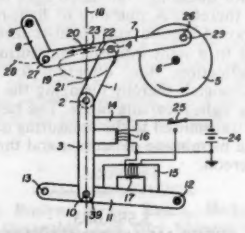
Apparatus for measuring fluid temperature, fluid density, or acceleration, including a cylindrical chamber having a pair of radial input connections at diametrically opposite points and an axially output connection including means responsive to any vortical component of fluid flow therein. Concentric with the housing, and of somewhat smaller diameter, is an annular coupling element for insuring initial radial flow of fluid toward the output connection. The apparatus is mounted for acceleration normal to the axis of the chamber. If this acceleration is constant (e.g. gravity) and fluids of different temperatures or different densities are supplied to the input connections, the discharging fluid has a vortical component which varies with the temperature difference or the density difference, and if one temperature or one density is also held constant, the vortical component varies with the other temperature or density. If, on the other hand, the temperatures or densities are held constant, or their differences are held constant, the vortical component varies with the acceleration.

3,580,088
CURVE GENERATING LINKAGE
James A. Clark, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed May 1, 1968, Ser. No. 725,816
Int. Cl. F16h *21/00*
U.S. Cl. 74—1 **2 Claims**



A multibar linkage is used to produce a noncircular motion for generating aspherical surfaces. Linkages can be optimized to conform their output motions very accurately to predetermined curves such as those developed by optical designers for aspheric lenses and mirrors. Also, in optical design, the parameters of linkages may be used in place of mathematically expressed curves thus facilitating the simultaneous optimization of an optical system and a linkage for producing an aspheric surface for the system. A dressing tool mounted on the linkage dresses a cutting wheel to conform it to the desired curvature. The wheel shapes the workpiece accordingly.

3,580,089
MOTION-CONVERTING MECHANISM
Serge Ramseier, Carouge, Geneva, Switzerland, assignor to The Battelle Development Corporation, Columbus, Ohio
Filed Nov. 21, 1968, Ser. No. 777,665
Claims priority, application Switzerland, Nov. 21, 1967, 16377/67
Int. Cl. F16h *21/18*
U.S. Cl. 74—49 **16 Claims**



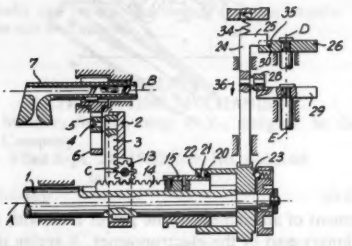
A mechanism for converting the continuous rotational motion of a crankpin into an alternating motion of a lever by means of two hinged levers, the free end of one lever being connected to the crankpin and the free end of the other lever able to move along a substantially rectilinear path (output). The connection between the crankpin and the free end of the first lever is such that the latter may describe cyclically a closed drive path located on opposite sides of the extended rectilinear path described by the free end of the second lever. Two holding members act respectively on the second lever to prevent it from moving otherwise than by a sliding motion along the latter rectilinear path, and on the guide element to

immobilize it at a fixed point coinciding with the upper end of this alternating motion. Either one or the other of the holding members is made operative and the first is arranged so as to form, when energized an abutment against which the second lever can back on to as soon as the free end of the first lever has crossed the rectilinear path (working stroke) and from which the second lever may move away when it is not energized by pivoting about the fixed point (idle stroke).

3,580,090
WINDING PITCH CHANGER OF A STATOR-WINDING MACHINE

Alexandr Andreevich Bondarenko, Moskovsky prospekt, 198/2, Kv. 69, and Fedor Grigorievich Klevanov, ulitsa Kotovskogo, 62-9, Kharkov, U.S.S.R.

Filed June 20, 1969, Ser. No. 835,170
Int. Cl. F16h *22/44*; H16h *21/00*; B65h *81/06*
U.S. Cl. 74—96 **2 Claims**

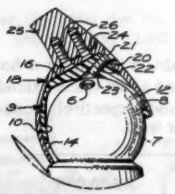


A winding pitch changer of a stator-winding machine comprises a changeover transmission for swinging a winding head and connected mechanically with an adjusting mechanism, the changeover transmission being in the form of a ratchet with a retainer linked kinematically with a former cam which is connected mechanically with a slide located in the slot of a link mechanism which rotates the winding head rod, the slide being moved at the moment when the ratchet is braked by the adjusting mechanism. The adjusting mechanism comprises a spring-loaded slide provided at one end with a stop interacting with a splined disc and a roller interacting with a cam which is kinematically linked with the splined disc while at the other end it has a tooth for braking the ratchet at the moment of the pitch change.

3,580,091
ACTUATOR FOR MIXING VALVE

Lloyd Spencer, 220 Patrician Way, Pasadena, Calif., and Tor Petterson, 1344 E. 6th St., San Pedro, Calif.

Filed Apr. 10, 1969, Ser. No. 814,991
Int. Cl. F16h *21/44*
U.S. Cl. 74—107 **6 Claims**

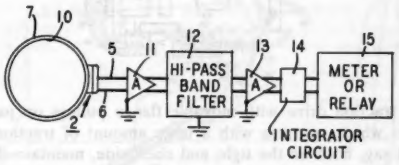


An actuator for a hot and cold water mixing valve, the valve terminating in a journal ball in which is mounted a pair of valve operating cam followers movable in parallel axes, the journal ball terminating in an annular stop shoulder; the actuator including an inner cap member having internal cam areas engageable by the cam followers and a peripheral movement limiting cam engageable with the stop shoulder, the cap member covering more than half the journal ball and slitted so as to be fitted thereon or removed therefrom; and a shell member conforming to the inner cap member to prevent expansion and thereby secure the cap member on the journal ball for universal movement of the cap and shell members, the shell member being secured to the cap member by an externally accessible fastener.

3,580,092
ACOUSTIC FLOWMETER

Thomas J. Scarpa, Edison, N.J., assignor to Scarpa Laboratories, Inc.

Filed Dec. 23, 1969, Ser. No. 887,505
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 **21 Claims**

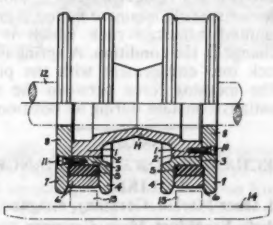


A clamp-on flowmeter having a pickup element designed to be removably secured on an external surface of a pipe, which is responsive to ultrasonic radiation generated by shear action of fluid flowing in the pipe. The signal from the pickup element is filtered, frequency-selectively amplified, and integrated, the output being used to operate indicating means, and various types of relay-actuated devices. In one embodiment, the pickup element is a piezoelectric wafer; and the response characteristic for the overall circuit including the pickup element is designed to be fairly uniform over a broad range of frequencies extending from just above the audio range to at least about 100 kilocycles. In a modification of this, the pickup element is designed to respond to a relatively narrow band of frequencies well above the audio range, to which band the amplifier-integrator circuit is specifically tuned.

3,580,093
LOWER ROLLER FOR ENDLESS TREAD FOR VEHICLE

Kazuhiro Tomizawa, Tokyo, Japan, assignor to Nittai Lease Company, Ltd., Tokyo, Japan

Filed Mar. 10, 1969, Ser. No. 805,395
Int. Cl. B62d *55/14*
U.S. Cl. 74—230.3 **1 Claim**



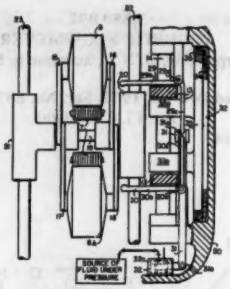
A lower roller for the endless treads of various vehicles, particularly to a lower roller comprising a hub, elastic element provided between tire flanges and metal ring provided around said elastic element.

3,580,094

MOTION TRANSMISSION DRIVE

Charles E. Kraus, Allendale, N.J., assignor to Excelermatic, Inc.

Filed Aug. 27, 1969, Ser. No. 853,429
Int. Cl. F16h 7/12
U.S. Cl. 74—242.11C **16 Claims**



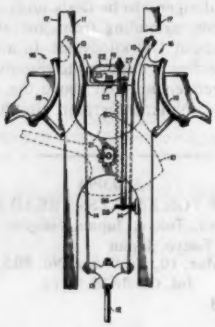
A traction drive with movable flange pulleys on parallel shafts which operates with a large amount of traction element sag, both on the tight and slack side, maintained by a dual roller tensioning means which, through servo means, compensates for load, wear, and ratio position by controlled flange movements.

3,580,095

CONSTANT MESHING FORCE RACK AND PINION

Aniese E. Seed, Toledo, Ohio, assignor to The Reliance Electric and Engineering Company, Toledo, Ohio

Filed Jan. 13, 1969, Ser. No. 790,605
Int. Cl. F16h 55/18; G01g 13/14
U.S. Cl. 74—409 **4 Claims**



In a condition responsive device, such as a load responsive weighing scale, a rotatably mounted pinion is engaged with a pivotably mounted balanced rack which is movable in response to change in the condition. A spring is provided for urging the rack into engagement with the pinion and for maintaining the meshing force between the rack and the pinion substantially constant during all positions of the rack.

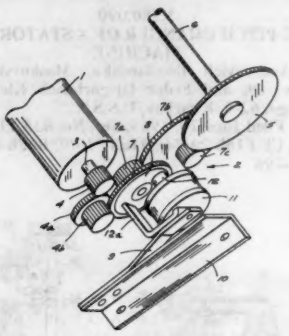
3,580,096

DRIVING MECHANISM FOR SLIDE CHANGERS OR THE LIKE

Josef Scheibel, Ober-Morlen, Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Main, Germany

Filed Sept. 5, 1969, Ser. No. 855,529
Claims priority, application Germany, Oct. 2, 1968, P1800516.8
Int. Cl. F16h 57/10; F16d 67/06
U.S. Cl. 74—411.5 **16 Claims**

The slide changer and the indexing mechanism for the tray of a slide projector are operated intermittently by a power train which is connected to the output shaft of an electric motor. An electromagnet is energized in response to opening of the motor circuit to bring about rapid stoppage of the slide changer and indexing mechanism in a predetermined position. Energization of the electromagnet results in frictional engagement of an element of the power train with a movable or stationary part of the electromagnet. A spring is provided to disengage the element of the power train from the stationary or movable part in response to deenergization of the electromagnet.

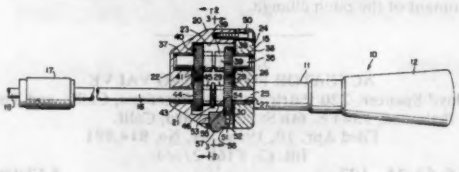


3,580,097

SCREW AND NUT DRIVER

Leonard Van Dalen, Cherry Hill, N.J., assignor to Seaboard Fabricators, Inc.

Filed Mar. 4, 1969, Ser. No. 804,139
Int. Cl. F16h 1/20; B25b 17/02
U.S. Cl. 74—421 **9 Claims**



A screw and nut driver including a housing mounting a gear train, a handle and a tool shank extending from opposite ends of the housing and respectively connected to the input and output of the gear train.

3,580,098

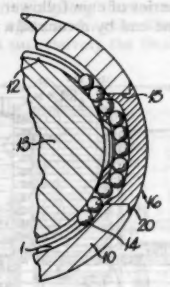
BALL SCREW AND NUT MECHANISM

Albert Goad, Hemel Hempstead, England, assignor to Rotax Limited, London, England

Filed Apr. 25, 1969, Ser. No. 819,352
Claims priority, application Great Britain, Apr. 29, 1968, 20134/68
Int. Cl. F16h 55/22, 1/18
U.S. Cl. 74—459 **3 Claims**

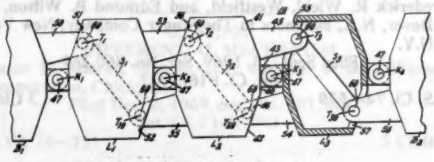
A ball screw and nut mechanism including an insert which is positioned within a recess in the nut, the insert defining

scoop portions which depend into the groove in the screw, the scoop portions being interconnected by a passage



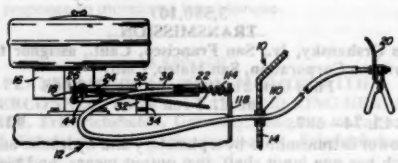
whereby balls can recirculate during relative angular movement of the nut and screw.

3,580,099
ARTICULATING MECHANISM
Ralph S. Mosher, Schenectady, N.Y., assignor to General Electric Company
Filed Sept. 24, 1969, Ser. No. 860,640
Int. Cl. G05g *1/00*
U.S. Cl. 74—469 **10 Claims**



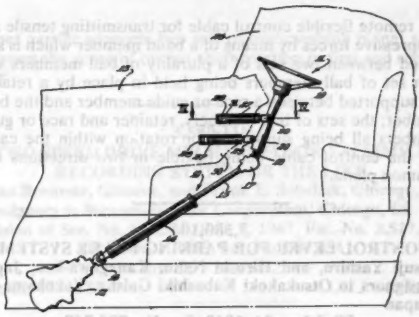
An articulating mechanism to provide large angular motions using a plurality of links, one of which includes a long and a short member in crossed relationship and a pair of side bars each pivotally connected to respective adjacent ends of the members. Extension bars on one side and on the other side of the long member and integral therewith function as side bars of a preceding and a succeeding link. Elimination of one type of extension bar on a link at one end of the mechanism and the other type of extension bar on a link at the other end of the mechanism provides transitional links for pivotal connection of the long cross bar of each of the transitional links to a respective rigid member.

3,580,100
DRIVER TRAINING CAR THROTTLE DISCONNECT
Louis W. McDermott, c/o McDermott Ford Sales, R. R. #1, Dyersville, Iowa
Filed Dec. 30, 1969, Ser. No. 889,269
Int. Cl. G05g *11/00*
U.S. Cl. 74—482 **10 Claims**



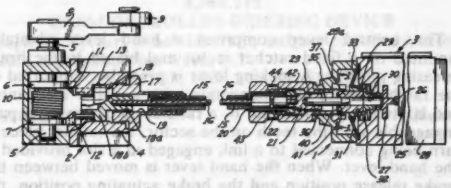
A selectively remotely actuatable control for operative connection between the throttle linkage and throttle valve control arm of an automotive carburetor including means operable, when the control is actuated, to render inoperative a normally operative motion-transmitting connection between the throttle linkage and the throttle valve control arm and return, by spring return means, the throttle valve control arm to its idle position independent of the position of the throttle linkage.

3,580,101
TELESCOPING SECTION IN A STEERING COLUMN
Anker E. Jorgensen, Portland, Oreg. and Gerald K. Oxley, Lafayette, Ind., assignors to TRW Inc., Cleveland, Ohio
Filed Nov. 12, 1968, Ser. No. 774,911
Int. Cl. B62d *1/18*
U.S. Cl. 74—493 **1 Claim**



Telescoping section between a steering shaft and steering gear, comprising an elongated tube and an intermediate shaft sliding connected therewith for rotational driving. The intermediate shaft journaled in a bushing in the end of the elongated tube. An internal stop in the tube spaced from but near the bushing prevents buckling between the tube and the shaft. The steering shaft housing is adjustably mounted in the vehicle cab by means of adjustable brackets attached to the dashboard of the vehicle cab and the steering shaft housing.

3,580,102
ADJUSTABLE FLEXIBLE CABLE FORCE TRANSMITTING ASSEMBLY
Voyta E. Wrabetz, Hubertus, and Ronald A. Banister, Mequon, Wis., assignors to Square D Company, Park Ridge, Ill.
Filed June 30, 1969, Ser. No. 837,813
Int. Cl. F16c *1/22*
U.S. Cl. 74—501 **7 Claims**

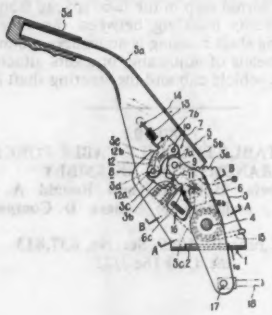


The flexible cable assembly comprises an outer sheath and inner cable with plungers on its ends, respectively, for transmitting normal operating forces in a direction from an operator at one end of the assembly to a switch at the opposite end. Adjustment means are connected to one plunger and are arranged to be changed in overall length by opposed forces imposed thereon by, and endwise of, the cable in excess of the normal operating forces. The adjustment means is adjusted to the effective length required for proper operation of the switch by the operator by operating the remote operator through one complete operating cycle while the operator, the switch, and the assembly are in final installed position. The effective length remains unchanged thereafter.

3,580,103
REMOTE FLEXIBLE CABLE
Russell L. Shreve, Troy, Mich., assignor to Teleflex Incorporated, North Wales, Pa.
Filed Aug. 1, 1969, Ser. No. 846,713
Int. Cl. F16c 1/28
U.S. Cl. 74—501 10 Claims

A remote flexible control cable for transmitting tensile and compressive forces by means of a band member which is supported between two sets of a plurality of ball members with each set of ball members being held in place by a retainer and supported between a race or guide member and the band member; the sets of ball members, retainer and race or guide members all being supported for rotation within the cable; and the control cable being flexible in two directions in a common plane.

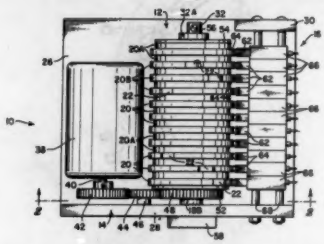
3,580,104
CONTROL LEVER FOR PARKING BRAKE SYSTEMS
Katsuji Yashiro, and Hiroshi Naito, Kanagawa-ken, Japan, assignors to Otsukakoki Kabashiki Gaisha, Yokohama-shi, Japan
Filed Jan. 24, 1969, Ser. No. 793,768
Claims priority, application Japan, July 29, 1968, 43/052960
Int. Cl. G05g 5/18
U.S. Cl. 74—535 5 Claims



The control lever comprises a hand lever pivotably mounted on a fixed ratchet sector and biased to the brake releasing position. A locking lever is pivotably supported on the ratchet sector for connection with a brake mechanism and is pivotably connected to a ratchet piece having a pawl engageable with the teeth on the sector, the ratchet piece in turn being connected to a link engaged in a slot provided in the hand lever. When the hand lever is moved between the brake release position and the brake actuating position, the pawl can travel past the teeth of the ratchet sector by oscillation of the ratchet piece and link as a result of displacement of the pin in the slot. A spring acts on the link to urge the pawl into engagement with the teeth when the hand lever reaches the brake actuating position.

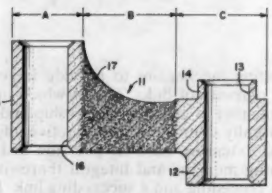
3,580,105
PROGRAM CONTROL APPARATUS
Warren E. Gilson, 4801 Sheboygan Ave., Madison, Wis.
Filed May 9, 1969, Ser. No. 823,411
Int. Cl. F16h 54/04
U.S. Cl. 74—568 11 Claims

A program control apparatus includes a drum mounted for rotation and a stack of cam rings removably supported upon the drum surface. The cam rings include outwardly projecting partly cut away flanges formed of easily removable material providing cam surfaces for the control of a program operation through a series of cam follower devices. The drum is mounted only at one end by means of a shaft connected to



a wall portion of a support, the support also supporting drive means for rotating the drum and the cam follower devices. The arrangement permits rapid and convenient setup and adjustment of programs through cutting away of portions of the cam ring flanges, through exchange of the cam rings, and through exchange of the entire drum assembly.

3,580,106
ALUMINUM PRESSED METAL LINK FOR 600 CLASS SEWING MACHINES
Frederick R. Wiehl, Westfield, and Edmund B. Wilson, III, Dover, N.J., assignors to The Singer Company, New York, N.Y.
Filed Sept. 23, 1969, Ser. No. 860,269
Int. Cl. F16c 7/02
U.S. Cl. 74—579 3 Claims

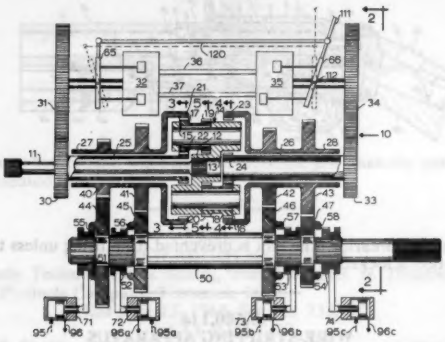


A drive link is disclosed for a sewing machine needle bar reciprocating mechanism. The drive link is constructed of an alloy containing principally aluminum and is formed at each extremity with porous lubricant accommodating bearing portions having a density which is a fraction of the theoretical solid alloy density of the aluminum alloy so as to provide porosity for lubricant retention and self-oiling bearing characteristics. The portion of the drive link joining the bearing portions, however, possesses superior structural characteristics because it is formed to a density which is substantially equal to the theoretical solid alloy density of the aluminum alloy which is used.

3,580,107
TRANSMISSION
Elias Orshansky, Jr., San Francisco, Calif., assignor to URS Systems Corporation, San Mateo, Calif.
Filed Oct. 21, 1968, Ser. No. 769,008
Int. Cl. F16h 47/08
U.S. Cl. 74—687 93 Claims

Power is transmitted by a planetary and hydraulic assembly which has one input shaft, two output means, and two reactions. While one output means is increasing its speed, the other output means is simultaneously decreasing its speed, and the ratio of the maximum speed of one output means to its minimum speed is substantially the same as the ratio of the maximum speed of the other output means to its minimum speed. This characteristic of speeding up one out-

put means while the other slows down is used over and over again by shifting the final output from the point where one of the output means is going at maximum speed to the other output means when it is going at minimum speed, thus going through this cycle again and again. The power transmission therefore connects successively the final output drive to one



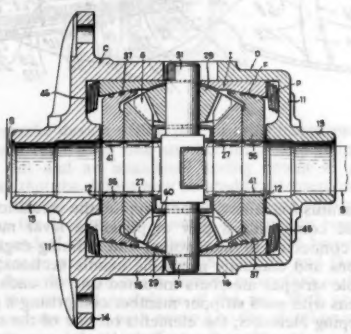
output member of the planetary assembly and then to the other output member of the planetary assembly, and then back to the first output member of the planetary assembly at a different ratio from the previous connection, and so on, and this can be done because these output means continually increase and decrease their speeds.

3,580,108

DIFFERENTIAL MECHANISM

Spencer H. Mieras, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 2, 1969, Ser. No. 881,346
Int. Cl. F16h *1/44*
U.S. Cl. 74—711 **5 Claims**



A limited slip differential mechanism having preloaded conical friction members which retard differential action. The mechanism includes camming means operable independently of the mechanism side gears to proportionally decrease friction preload force on the conical friction members in response to increasing input torque.

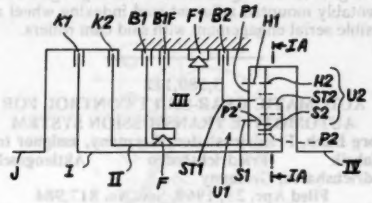
3,580,109

PLANETARY-GEAR TRANSMISSION WITH INTERCONNECTED SUN GEARS AND RING GEARS

Franz Hill, Friedrichshafen, Germany, assignor to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Germany

Filed Sept. 4, 1969, Ser. No. 855,137
Claims priority, application Germany, Sept. 6, 1968, Z12082
Int. Cl. F16h *5/30*
U.S. Cl. 74—763 **4 Claims**

An automotive transmission with two cascaded planetary gear trains has the two ring gears rigidly connected with each other and with the output shaft, the input shaft being alternately connectable with one planet carrier (forward) or with the two interconnected sun gears (reverse). The driven



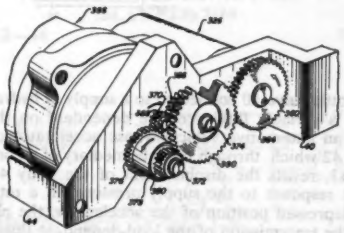
planet carrier supports two sets of intermeshing planet gears to invert the sense of output-shaft rotation in first and second gear.

3,580,110

TWO SPEED DRIVE MECHANISM FOR FACSIMILE RECORDING SYSTEM OR THE LIKE

Frans Brouwer, Glencoe, and Frank L. Sobchak, Chicago, Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Division of Ser. No. 613,545, Feb. 2, 1967, Pat. No. 3,527,882.
Filed Dec. 1, 1969, Ser. No. 881,054
Int. Cl. F16h *5/52*
U.S. Cl. 74—812 **4 Claims**



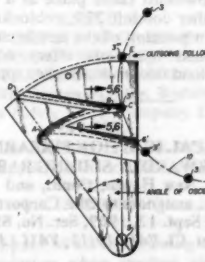
A facsimile device including a two speed drive mechanism for driving the recording medium. The mechanism includes a reversible motor and a gearing means to drive the medium at one speed in a forward direction when the motor is operated in one direction and at a different speed in the forward direction when the motor is operated in the opposite direction.

3,580,111

CAM-CONTROLLED INDEXING DEVICE

Joseph M. Tyrner, Brookside, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 23, 1969, Ser. No. 818,607
Int. Cl. B23b *29/00*
U.S. Cl. 74—817 **6 Claims**



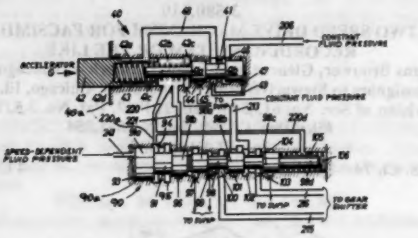
This application relates to cam-controlled indexing devices. The subject indexing device includes a rotatable in-

dexing wheel perpendicularly mounted on a driven shaft and having cam rollers thereon equispaced alternately on opposite sides of said wheel at a constant radial distance from said driven shaft. The indexing wheel is driven by a cam drive comprising as oscillating sector cam having a groove therein and pivotably mounted adjacent said indexing wheel and for irreversible serial engagement with said cam rollers.

3,580,112
AUTOMATIC GEAR-SHIFT CONTROL FOR AUTOMOTIVE TRANSMISSION SYSTEM

Hansjorg Dach, Friedrichshafen, Germany, assignor to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Germany

Filed Apr. 21, 1969, Ser. No. 817,984
Claims priority, application Germany, Apr. 20, 1968, P 17 55 282.8
Int. Cl. B60k *21/08*
U.S. Cl. 74—868 **9 Claims**



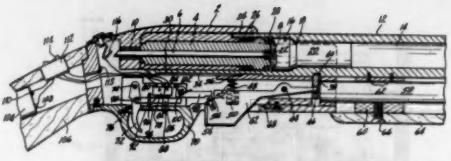
A throttle valve 40 connected to a supply of hydraulic fluid delivers a variable fluid pressure dependent on the engine load of an automotive vehicle whose accelerator controls a plunger 42 which, through the intermediary of a compression spring 43, resists the displacement of the body 41 of that valve in response to the supply pressure. In a retracted or partly depressed position of the accelerator, the plunger 42 blocks the transmission of the load-dependent fluid pressure via a first conduit 220 to an automatic switching device 90 having a control piston 91 acted upon by speed-dependent fluid pressure and biased by a countervailing spring 105 into a normal, low-speed position. In the absence of supplemental fluid pressure from the throttle valve 40, the control piston 91 together with an associated slider 98 is moved into an off-normal, high-speed position whenever the speed-dependent fluid pressure overcomes the force of the biasing spring 105; with the accelerator in a position approaching full throttle, i.e. beyond a predetermined load threshold, the biasing force is supplemented by the load-dependent fluid pressure so that upshifting occurs at higher drive shaft speeds only. The load-dependent fluid pressure is applied in aiding relationship via two branch conduits 220*a*, 220*d* to a face of the piston and to another face on the slider, the first branch conduit 220*a* being obstructed in the off-normal piston position so as to create a hysteresis effect whereby under unchanged load conditions the downshift takes place at a lower speed than the upshift. Another conduit 221, unblocked by the plunger 42 in a kick-down position of the accelerator, partly cancels the aforementioned hysteresis effect whereby downshift under maximum load occurs at a higher speed.

3,580,113
ELECTRICAL IGNITION FIREARM, WITH A FORWARDLY SLIDING BARREL

Marcus Ramsay, New Haven, Conn., and Arthur W. Lilley, Pittsburgh, Pa., assignors to Olin Corporation

Filed Sept. 12, 1969, Ser. No. 857,366
Int. Cl. F41c *19/12*; F41f *13/08*
U.S. Cl. 42—84 **9 Claims**

A firearm for electrically firing caseless ammunition having no primer. A switch is actuated by the trigger to permit passage of current from a capacitor to an electrode contacting the ammunition. Elapsed time between trigger pull and firing of the ammunition is decreased as compared to impact

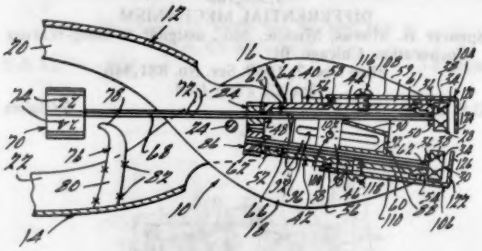


ignition firearms. The gun is prevented from firing unless the action is locked in its battery position.

3,580,114
WIRE-STRIPPING APPARATUS

Walter J. Rozmus, Hubbardsville, N.Y., assignor to Utica Tool Company, Inc., Orangeburg, S.C.

Filed June 6, 1968, Ser. No. 734,984
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.5 **27 Claims**



An apparatus for removing or stripping the insulation from a wire and comprising a pair of pliers-like lever members pivotably connected to one another and defining engageable jaw sections and manually grippable handle sections; a pair of rotatable stripper members mounted one on each of the jaw sections with each stripper member comprising a plurality of stripping elements; the elements on one of the stripper members corresponding to and adapted to be operatively associated with the stripping elements on the other stripper member; shaft means rotatably supporting the stripper members and means for effecting simultaneous rotation of the shaft means and stripper members thereon, whereby corresponding stripping elements may be moved into confronting cooperable relation; spring means for resiliently urging the jaw sections apart and for providing an audible signal in response to preselected rotational movement of the shaft means, and guide means on the forward ends of the jaw sections for guiding the wire from which insulation is to be stripped during relative axial movement of the wire with respect to the stripping apparatus.

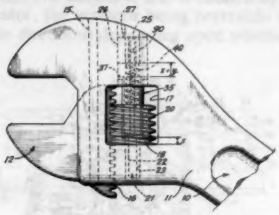
3,580,115
WRENCH HAVING A LOCKED ADJUSTABLE POSITION

Harry W. Thompson, 8007 S. Chappel Ave., Chicago, Ill.

Filed July 24, 1969, Ser. No. 844,571
Int. Cl. B25b *13/16*
U.S. Cl. 81—165 **6 Claims**

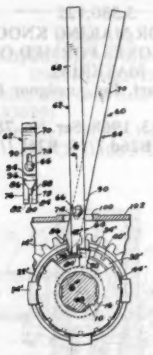
An adjustment wrench is afforded in which the adjusted

position is locked by a worm nut held in engagement, by a coil spring, with a nonrotatable key. The gear thread on the



nut, when turned, will adjust the movable jaw when the nut is unseated from the key.

3,580,116
CLUTCH ADJUSTMENT TOOL
Janis Tenisons, Edwardsburg, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.
Filed June 13, 1968, Ser. No. 736,717
Int. Cl. B25b *7/00*
U.S. Cl. 81—302 **5 Claims**



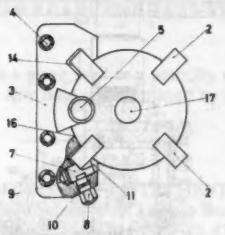
A pliers-like device with a pair of arms interconnected for movement relative to one another for manipulating a wear takeup nut and an associated spring detent in a friction clutch so that the detent may be readily released and the nut readily adjusted manually at a mechanical advantage provided by the tool and from outside the clutch housing. The working end of one arm of the tool has a slot between chisel point faces to pry out and hold the detent, and the working end of the other arm has a narrow projection or tongue to engage the notched periphery of the nut. Both ends of the tongue arm are offset with respect to the chisel point arm so that the arms do not interfere when they are pivoted past each other.

ERRATUM

For Class 82—2 see:
Patent No. 3,580,129

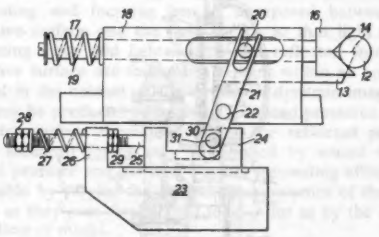
3,580,117
TOOL CARRIER ASSEMBLY FOR A LATHE OR OTHER MACHINE TOOL
Stefan Sarzinski, Sarajevo, Yugoslavia, assignor to "Zrak"-Preduzece Precizne mehanike i optike, Sarajevo, Yugoslavia
Filed Feb. 27, 1969, Ser. No. 802,893
Claims priority, application Yugoslavia, Apr. 25, 1968, P-989/68
Int. Cl. B23b *29/00*; B26d *1/12*
U.S. Cl. 82—36 **8 Claims**

According to the present invention, there is provided a tool carrier assembly for a lathe or other machine tool, such assembly comprising a substantially circular body, a removable tool carrier having means to clamp a tool thereto, and a circular concave surface adapted to a cooperate with the outer surface of the body, at least two axially extending, cir-



cumferentially spaced apart, interengageably keys and grooves being formed on the circular surfaces of the body and tool carrier and means to cause relative movement between one of the grooves and its associated key to secure the tool carrier to the body.

3,580,118
MACHINE TOOL CUT-OFF SLIDE
Jack A. Hazel, Northolt, England, assignor to C.A.V. Limited, Warple Way, Acton, London, England
Filed Nov. 19, 1968, Ser. No. 776,897
Int. Cl. B23b *5/14*
U.S. Cl. 82—46 **5 Claims**

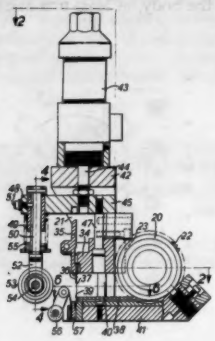


A machine tool for use when parting off a component from a barstock using a parting off tool and comprising a pusher member engageable with the component and arranged to apply a lateral force to the component to shear the component from the barstock when the parting off tool has machined to a predetermined depth the bridge of material forming the connection between the component and the barstock.

3,580,119
MAINTAINING SHEETS OF GLASS IN MUTUALLY SPACED RELATIONSHIP WHEN STACKED TOGETHER FOR TRANSPORT OR STORAGE
Geoffrey Frank Witherington-Perkins, Redditch, England, assignor to Triplex Safety Glass Company Limited, London, England
Filed Jan. 31, 1969, Ser. No. 795,579
Claims priority, application Great Britain, Jan. 31, 1968, 4,902/68
Int. Cl. B26d *5/22*
U.S. Cl. 83—23 **6 Claims**

A method and apparatus for maintaining sheets of glass in mutually spaced relation when stacked together. Flexible strip material is fed to a severing machine wherein strips are cut to length. Thereafter the cut strips are applied to sheets

of glass before the glass sheets are stacked together. One face of the strip material is smoother than the other face whereby

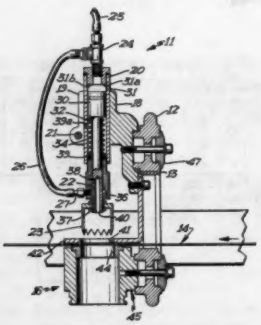


the smoother face tends to adhere to the glass more strongly than the less smooth face.

3,580,120
MULTIPURPOSE PUNCH

Richard C. Adams, West Barrington, R.I.; William S. Coombes, Somerset, and Domenic Lerardo, Walpole, Mass., assignors to G. T. Schjeldahl Company, Northfield, Minn.

Filed Nov. 5, 1968, Ser. No. 773,612
Int. Cl. B26d 7/18
U.S. Cl. 83—98 **7 Claims**



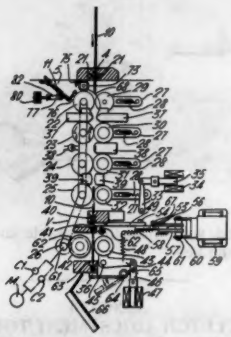
Punching apparatus particularly adapted for use in connection with flexible film materials including a punching assembly and a die assembly arranged in aligned relation with the punching assembly, means for reciprocably shifting the punch into engagement with the die for performing a cutting operation on film disposed between the punch and the die, and including means for injecting a pulse of compressed gaseous fluid when the punch is in its extended disposition. Bores are formed within the punching apparatus to permit coupling of a source of gaseous fluid under pressure to the punching assembly for discharge from the surface of the punch member, the arrangement being such that gaseous fluid under pressure is discharged from the punch only when the punch member is in its extended position.

3,580,121
APPARATUS FOR CHECKING A TICKET

Takeo Asada, and Toshihiro Kamiya, Kyoto-fu, Japan, assignors to Omron Tateisi Electronics Co., Kyoto-fu, Japan

Filed Feb. 27, 1969, Ser. No. 802,965
Claims priority, application Japan, Mar. 6, 1968, 43/14426
Int. Cl. B65h 43/00; B26d 5/32
U.S. Cl. 83—107 **8 Claims**

An apparatus for checking a ticket and more particularly a device for checking tickets such as an admission ticket for a theater and the like, which is capable of cutting a ticket into two halves after checking it, collecting one half in the ap-

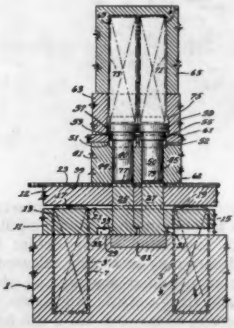


paratus and returning the other half to the original user of the ticket from the outlet slot on the apparatus.

3,580,122
APPARATUS FOR MAKING KNOCKOUTS IN ELECTRICAL BOXES FORMED OF PLASTIC MATERIAL

James C. Powell, Elkhart, Ind., assignor to All-Steel Equipment Inc.

Filed Dec. 13, 1968, Ser. No. 783,584
Int. Cl. B26d 7/18; B26f 1/14
U.S. Cl. 83—108 **16 Claims**



Knockouts are formed in electrical fixtures, such as connector boxes made of plastic sheet material, by punching the knockouts from plastic sheet or blanks prior to shaping into the fixture or by shaping the fixture and then punching out the knockouts. By resiliently supporting the material surrounding the knockout area on the punch side and resiliently biasing a knockout stripper against the surface of the knockout opposite that contacted by the punch, knockouts can be punched out and replaced in the material in a single operation if the opposite biasing forces of the support and knockout stripper are properly correlated.

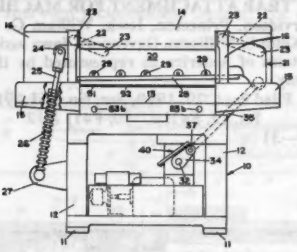
3,580,123
CUTTER

Dan P. Westra, and John J. Siewert, Grand Haven, Mich., assignors to The Challenge Machinery Company, Grand Haven, Mich.

Filed June 13, 1968, Ser. No. 736,808
Int. Cl. B26d 5/42, 5/16
U.S. Cl. 83—380 **14 Claims**

A cutter adapted particularly for cutting paper stock including a clamping mechanism and a knife member. The

knife member is reciprocated into and out of abutment with the paper-supporting table by means of an eccentric arm and a connecting rod. The eccentric arm is rotated by means of a hydraulic actuator, the actuator being reversible such that it runs in opposite directions depending upon whether the knife



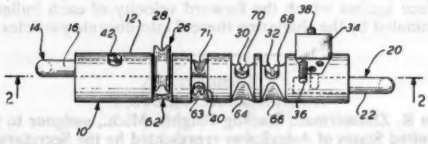
is being raised from the table or lowered into abutment therewith. Suitable safety stops are provided for limiting the movement of the eccentric member in the event of failure of one of the controls therefor. The arm is positioned over-center when the knife is in its raised position.

3,580,124

NOVEL PITCH ADJUSTMENT MEANS FOR STRINGED INSTRUMENTS

John Mancini, Roselle, N.J. (215 S.E. Third Ave. Apt. 107 D Hallandale, Fla. 33009)

Filed Apr. 13, 1970, Ser. No. 27,622
Int. Cl. G10d *3/00*
U.S. Cl. 84—313 **21 Claims**



There is provided a simple and novel device principally intended for use with a double bass or similar instrument, whereby the pitch of one string may be adjusted in a precise, predictable and reversible manner to a pitch other than that at which it is normally played. The device comprises a cylinder having a pulley mounted therein whose axis is parallel to but eccentric in relation to the principal axis of the cylinder. The device further optionally comprises excisions having adjustable plugs therein for the minor and, reversable, adjustment of the pitch of the other strings, means for rotating the cylinder into a "contact" and "noncontact" position wherein the string of the instrument to be adjusted in pitch either is in contact or is not in contact respectively with the pulley. The device further optionally comprises a means for controlling the degree of rotation of the device between the "contact" and "noncontact" positions.

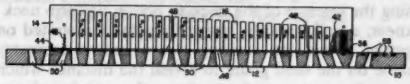
3,580,125

KEY-ADJUSTABLE HARMONICA

Oliver W. Heatwole, 3900 16th St. N.W., Washington, D.C.

Filed Apr. 4, 1969, Ser. No. 813,463
Int. Cl. G10d *7/12*
U.S. Cl. 84—377 **28 Claims**

A key-adjustable harmonica for selectively playing in any one of a plurality of musical keys by the use of seven consecutive blowholes per octave without the necessity for readjusting the harmonica to obtain the proper notes in the key. The harmonica includes means for selectively connecting all of the seven blowholes per octave with only those reed cells of chromatically arranged cells containing reeds tuned to the notes of the selected key while blocking off those cells not in the selected key. In addition, the arrangement provides



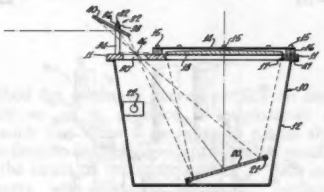
means of access to a given reed in a plurality of adjustments of the harmonica. Any note can be played by either blowing or drawing at will.

3,580,126

LIGHT DISPLAY INSTRUMENT

John F. Forkner, 2670 Solana Way, Laguna Beach, Calif.

Filed Oct. 29, 1968, Ser. No. 771,479
Int. Cl. A63j *17/00*
U.S. Cl. 84—464 **19 Claims**



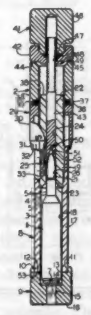
A device for producing esthetically pleasing patterns of light which is controllable like a musical instrument. The device includes an elastically stretchable reflective mirror surface which is spaced from a high intensity light source. A collimating and focusing lens is interposed between the reflective surface and the light source so that light beams emanating from said light source and reflected from said reflective surface are focused st a point within an aperture defined in the cabinet of the device. A dynamic image display may be produced by applying localized pressures to the reflective surface thereby distorting the reflected pattern. These localized forces may be applied by sound waves, manual pressure and the like. Further interesting effects are obtainable by varying the optical characteristics of the light beams as they pass through the focal point as by the use of light filters or masks.

3,580,127

CARTRIDGE CASE RELOADING

Richard J. Lee, R.R. 2, Hartford, Wis.

Filed Aug. 19, 1968, Ser. No. 753,461
Int. Cl. F42b *33/10, 35/02*
U.S. Cl. 86—24 **8 Claims**



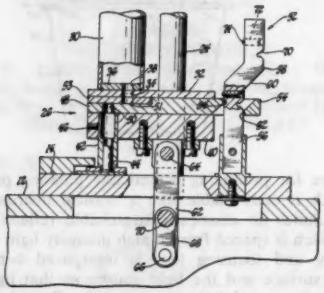
In apparatus for reloading used center-firing cartridge cases, a resizing sleeve having a bore therein of which the

upper portion is cylindrical and the lower portion is tapered to wedgingly receive the neck of a cartridge case driven upwardly therein to resize and reform the neck and to hold the neck in a reaming position therein; a reamer adapted for reaming the interior of the neck to obtain uniform neck wall thickness; a bullet-seating gauge threadably mounted on the projecting above the resizing sleeve and micrometrically alignable on the shell guide to reveal the distance which the bullet-seating gauge projects above the resizing sleeve; an elongated bullet seater adapted to engage and force a bullet downwardly a predetermined distance into a seated position within the neck while the neck is partially within the tapered lowered portion of the bore in a bullet-seating position; and means for positioning the neck in the bullet-seating position.

3,580,128
AMMUNITION RELOADER

Robert A. Leich, Southfield, Mich., assignor to Camdex, Inc., Detroit, Mich.

Filed Sept. 4, 1969, Ser. No. 855,149
Int. Cl. F42b *33/02*
U.S. Cl. 86—31 **22 Claims**

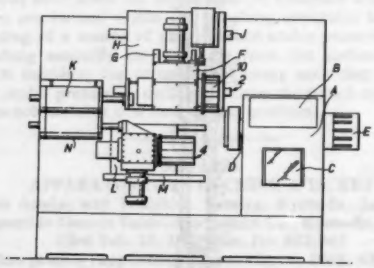


An automatic powder metering apparatus for loading ammunition including a powder slide, a cam for cyclically displacing the slide between a powder input position and a powder output position and means on the cam for cyclically pulsating the slide when in the two above-named positions to loosen the powder for correct feeding.

3,580,129
PRESETTABLE TOOL ARRANGEMENTS FOR MACHINE TOOLS

Eric R. Austin, Coventry, and Eric G. Bill, Solihull, England, assignors to B.S.A. Tools Limited, Birmingham, England

Filed Aug. 30, 1968, Ser. No. 756,458
Claims priority, application Great Britain, Sept. 1, 1967, 40086/67
Int. Cl. B23b *3/00*
U.S. Cl. 82—2 **2 Claims**

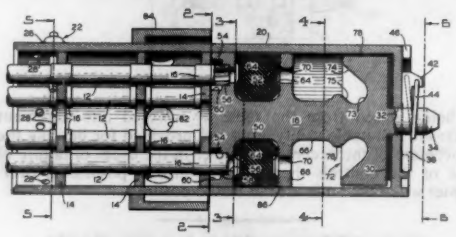


A presettable tool arrangement incorporates a tool holder with a dovetail slide portion for slidably engaging a dovetail guideway on a tool mount. An adjustable abutment rod on the tool holder engages an abutment on the tool mount for accurately positioning the preset tool holder on the tool mount.

3,580,130
BULLET TRAP ATTACHMENT FOR MACHINE GUNS

Paul W. Arvidson, Princeton, Iowa; William G. Park, Silvis, Ill., and Keith S. Williams, Davenport, Iowa assignors to The United States of America as represented by the Secretary of the Army

Filed Sept. 29, 1969, Ser. No. 861,691
Int. Cl. F41f *17/00*; **F41j** *1/12*
U.S. Cl. 89—31 **8 Claims**

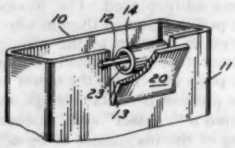


The safe trapping of one or more bullets fired from a Gatling-type machine gun is accomplished by an attachment releasably secured to the muzzle end of the barrel cluster and provided with an interior chamber containing an elastomeric material at the rear end thereof capable of being penetrated by those bullets existing from the barrels and immediately recovering thereafter to seal any discharge gases then in the chamber, the forward wall of the chamber forming an impact surface against which the forward velocity of each bullet is terminated by the shattering thereof into discrete particles.

3,580,131
ANTIFEEDBACK DEVICE

John R. Zimmerman, Sterling Heights, Mich., assignor to the United States of America as represented by the Secretary of the Army

Filed Oct. 20, 1969, Ser. No. 867,614
Int. Cl. F41d *9/02*
U.S. Cl. 89—34 **4 Claims**



A simplified antifeedback device for installation in vertically fed belt-type ammunition supply systems is disclosed. The device comprises a tube mounted in a cutaway portion of the feed guide in such a manner that it is moved up and out of the way as the ammunition belt advances, but lodges itself between links of the ammunition belt and the cutaway portion of the feed guide when the belt is drawn downward by gravity upon the cessation of ammunition feed.

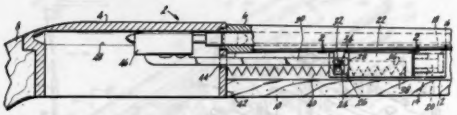
3,580,132
BUFFER AND DELAY MECHANISM FOR A FIREARM

Edwin S. Vartanian, North Haven, Conn., assignor to Olin Mathieson Chemical Corporation

Filed Sept. 25, 1968, Ser. No. 762,593
Int. Cl. F41d *5/04*, *11/12*
U.S. Cl. 89—130 **7 Claims**

A mechanism for reducing the recoil force caused by reciprocation of a bolt assembly in a semiautomatic firearm,

and for delaying the return of the bolt assembly from its retired position to its battery position. A slide block is mounted for reciprocation adjacent to the barrel, and the bolt assembly is mounted for reciprocation within the receiver. A pair of slide arms are secured to the bolt assembly and extend toward the slide block, normally abutting the latter. A spring engages the slide block to decelerate the latter during rearward reciprocation thereof. The slide block



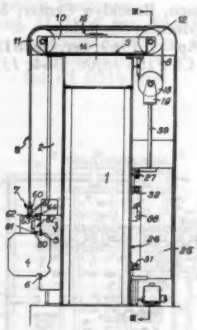
thus decelerates during its rearward stroke while the bolt assembly and slide arms are thus free to move away from the slide block to strike the rear of the receiver and rebound forwardly therefrom. After rebound, the slide arms and bolt assembly strike the rearwardly moving slide block to cause a pause in the reciprocation cycle, after which pause the slide block, slide arms, and bolt assembly all move forward to their original positions under the influence of the spring.

3,580,133

BALANCE COMPENSATING DEVICE

Charles William Berthiez, 5, Avenue Eglantine, Lausanne, Switzerland

Filed May 1, 1969, Ser. No. 820,943
Claims priority, application France, May 3, 1968, 150,473
Int. Cl. B23c 1/02
U.S. Cl. 90—11 **12 Claims**



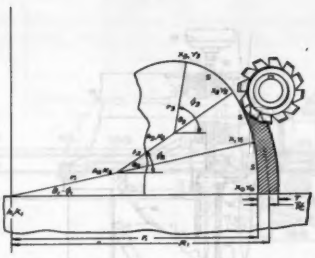
A milling and boring machine having an upright with a front face and a rear face and pulleys slideways on the front face, a saddle mounted for sliding movement on the vertical slideway, the saddle having horizontal slideways on which is mounted a headstock adapted for sliding movement with respect to the saddle. The machine tool is provided with a counterweight for the headstock to balance the horizontal movements of the latter which is fixed in the vertical direction. The balancing means includes a horizontal beam mounted on the upright adapted for pivotal movements around a vertical axis so that one end of the beam constantly hangs over the headstock. A loose pulley is mounted at each end of the beam and flexible extension means pass over both pulleys and connect the headstock to the counterweight on the rear face of the upright. A hydraulic takeup means is provided for the flexible suspension means which is adapted to maintain counterforces between the counterweight and the headstock.

3,580,134

MACHINING METHOD

Edwin C. Harrington, Jr., Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 21, 1968, Ser. No. 769,342
Int. Cl. B23c 1/16
U.S. Cl. 90—13C **3 Claims**



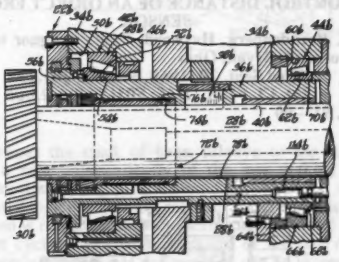
A method for cutting a curved surface on one face of a workpiece so as to produce a longitudinal curverature thereon such that when a specimen in planar sheet form is placed in face-to-face engagement with the resulting curved surface, the strain on the outer surface of such specimen varies linearly with distance along the surface of such specimen.

3,580,135

CLAMPING APPARATUS FOR A MACHINE TOOL

Gordon H. Jones, Van Dyne, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.

Continuation-in-part of application Ser. No. 744,458, July 12, 1968, now Patent No. 3,540,346. This application Sept. 3, 1969, Ser. No. 854,998
Int. Cl. B23c 1/02
U.S. Cl. 90—11A **14 Claims**



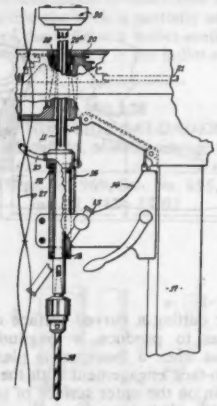
A machine tool having a longitudinally adjustable machining spindle carried by a rotary spindle sleeve and securely clamped releasably within the sleeve by a clamping bushing encircling the spindle. The clamping bushing is force fitted within the encircling structure of the sleeve so that residual compressive stresses are established. The sleeve and clamping bushing define an elongate, annular chamber, cylindrical in nature, which is disposed intermediate the ends of said bushing and sealed to render same a fluid chamber. Fluid pressure means are associated with said chamber to provide fluid under pressure, whereby said clamping bushing is restricted circumferentially to effect hard compressive contact with a machine tool spindle. The clamping arrangement utilizes a relatively thick, stiff clamping bushing structure in conjunction with a plenum chamber that is extremely narrow in section, whereby numerous advantages over prior clamps are attained.

3,580,136

SONIC ENERGY IN MACHINING OPERATIONS

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif.

Filed Dec. 9, 1968, Ser. No. 782,347
Int. Cl. B23d *39/00*; B23b *47/34*; B23c *1/00*
U.S. Cl. 90—64 7 Claims



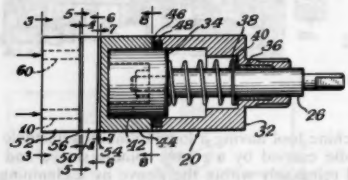
A machine tool such as a drill has a stem of elastic material to which the cutting tool is attached. Supported on this stem is an orbiting-mass oscillator. While a machining operation is being performed, the orbiting-mass oscillator is driven at a frequency such as to resonantly elastically vibrate the stem, thereby providing sonic energy to the cutting tool which effectively pulverizes the cuttings made by the cutting tool so that they will not impede the machining operation.

3,580,137

FLUID PROXIMITY SENSOR AND DRIVE MECHANISM TO CONTROL DISTANCE OF AN OBJECT FROM THE SENSOR

Karl A. Brandenberg, Hayward, Calif., assignor to The Aro Corporation, Bryan, Ohio

Filed Sept. 20, 1968, Ser. No. 761,238
Int. Cl. F15b *11/15*; F01l *15/04*, *25/06*
U.S. Cl. 91—50 12 Claims



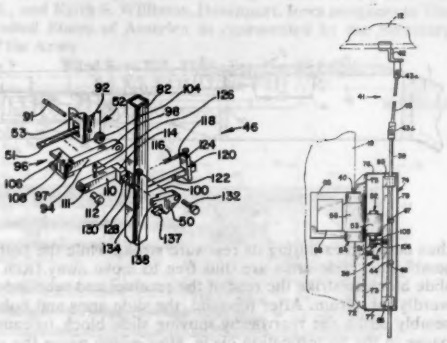
A unipressure fluid logic control and power supply device which utilizes a single air pressure source for sensing and indicating the proximity or gap between a sensor and a driven element. The same supply means provides power to an air motor which drives the driven member and maintains it in a desired position in relation to the proximity sensor. The sensing device includes a fluid oscillator adapted to drive the piston-type air motor and an air inhibitor which prevents the oscillator from operating whenever a sensed fluid signal indicates the proximity or position of the driven member is as desired.

3,580,138

VALVE OPERATING MECHANISM

Gunter Maasshoff, Glenview, Ill., assignor to Hawk Oil Field Equipment Corp., Evanston, Ill.

Filed July 28, 1969, Ser. No. 845,423
Int. Cl. F01l *25/06*, *31/02*
U.S. Cl. 91—277 14 Claims



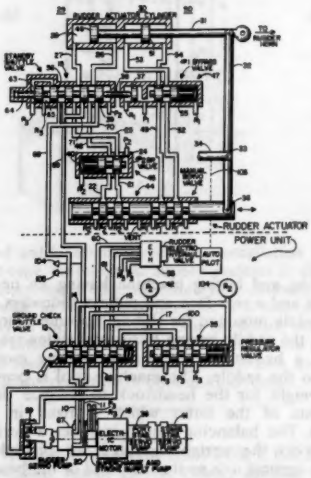
A spring biased swing arm is operatively associated with a control arm of a valve assembly for moving the arm to quickly control the flow of fluid to a reciprocating hydraulic operating mechanism in a well pumping apparatus. The swing arm is moved with a snap action by a spring when a tripping block engages and moves a pivotally mounted toggle actuator which moves the spring over center to cause quick movement of the control arm to one of its operative positions.

3,580,139

CONTROL APPARATUS

Robert F. Rasmussen, Brooklyn Center, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 3, 1969, Ser. No. 813,018
Int. Cl. F15b *18/00*; B64c *13/42*
U.S. Cl. 91—411 11 Claims



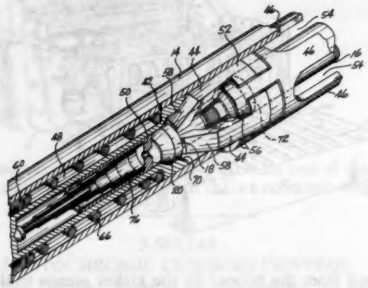
Conventionally, in aircraft having fluid operated servomotors for positioning the control surfaces, aircraft engine driven pumps supply the operating fluid pressures for the servomotors while the aircraft is in flight.

3,580,140

LOCKING MECHANISM FOR FLUID TYPE ACTUATORS

William H. Walker, 2210 104th S.E., Bellevue, Wash.

Filed Dec. 9, 1968, Ser. No. 782,290
Int. Cl. F15b *15/26*
U.S. Cl. 92—25 7 Claims



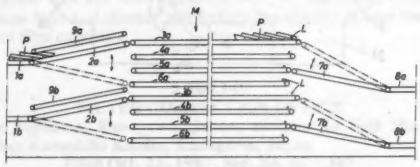
A device mounted to the piston of a hydraulic actuator to mechanically lock the piston in its retracted position. The piston carries several locking segments which, with the piston retracted, reach inwardly to engage the head of a locking stud that is fixed to the cylinder. When hydraulic fluid is fed into the cylinder so as to extend the actuator, the hydraulic pressure first pushes back a locking piston (located within the main piston) which positively moves the locking segments out of engagement with the locking stud, and then the main piston moves to its extended position. With no hydraulic pressure acting to extend the main piston, the segments lock the piston in its retracted position.

3,580,141

APPARATUS FOR PAPER SACKS MANUFACTURE

Herbert Richter, Beckum, Germany, assignor to Windmoller & Holscher, Lengerich, Germany

Filed Aug. 21, 1968, Ser. No. 754,247
Claims priority, application Germany, Aug. 28, 1967, H60025
Int. Cl. B31b *1/00*
U.S. Cl. 93—8 5 Claims



A system of multiple conveyor belts designed to maintain a balance between the output of a tube-forming machine and a bottom-folding machine used in the manufacture of paper, plastic or similar sacks, in which an assemblage of conveyor belts having sufficient capacity for the piles of tubes produced by the tube-former acts as a magazine upon which the bottom-folder draws as required. Pivoting conveyor belts, directed by suitable monitoring devices, maintain a steady flow into and out of the magazine.

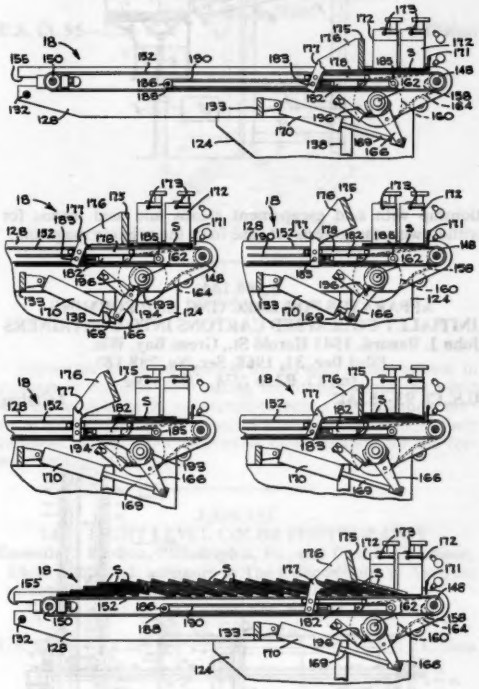
3,580,142

BAG STACK ACCUMULATING CONVEYOR

David K. Stock, and Robert J. Wech, Green Bay, Wis., assignors to FMC Corporation, San Jose, Calif.

Filed May 5, 1969, Ser. No. 821,754
Int. Cl. B31b *1/14, 1/64, 1/98*
U.S. Cl. 93—33 12 Claims

A machine produces bags from thermoplastic web by intermittently feeding and severing the web with a heated reciprocating seal bar. The time interval between two seal bar reciprocations represents a bag making cycle and the number of bag making cycles per minute is the production rate of the machine. Bags produced by the machine are discharged between stacking guides that constrain the bags to fall into a neatly registered stack on an index conveyor at the cyclical rate of bag production. When a predetermined bag count per stack is reached, bag production is interrupted for a period known as an interrupt cycle, during which the index



conveyor moves the stack of bags, relative to the stacking guides, at a rate independently of the bag making cycle. Upon resumption of bag production, a second stack of bags is formed in shinglelike fashion relative to the first stack and the operation is repeated. Since indexing is performed during an interrupt cycle which is independent of the bag making cycle, the production rate of the machine can be increased to a maximum by using a bag making cycle that is less than an indexing time interval.

3,580,143

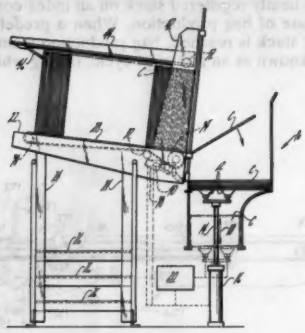
MAGAZINE CONSTRUCTION FOR PACKING CASE ERECTING MACHINE

Daniel McIntyre, Portland, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

Filed Apr. 22, 1968, Ser. No. 722,943
Int. Cl. B31b *1/06, 1/78, 1/94*
U.S. Cl. 93—53 10 Claims

A secondary case magazine is provided above and to one side of an upwardly open primary case magazine from which the lowermost case is cyclically withdrawn for erection. The secondary magazine is disposed generally horizontally, and holds a large number of cases in generally vertical edgewise relation. Escapement means at the exit end of the secondary magazine successively ejects each case for downward movement onto the stack of cases in the primary magazine. Means

in the secondary magazine urges all of the cases therein toward said exit end, and said means operates in timed relationship with said escapement means and said means for withdrawing the lowermost case from the primary magazine.



3,580,144

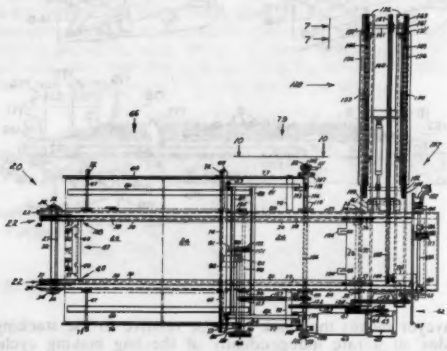
APPARATUS FOR ERECTING AND FORMING INITIALLY COLLAPSED CARTONS INTO CONTAINERS

John J. Renard, 1541 Harold St., Green Bay, Wis.

Filed Dec. 31, 1968, Ser. No. 788,181

Int. Cl. B31b *1/78, 5/26, 1/94*

U.S. Cl. 93—53AC **7 Claims**



A folded case opener apparatus including a flap depressor periodically actuated downwardly to allow a cooperating pivotal hooked arm to engage the advancing laterally disposed edge of an adjacent nondepressed flap thereby to raise said flap and erect such advancing folded case.

3,580,145

COUNTING APPARATUS

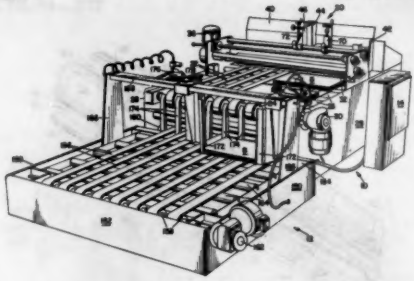
Roy E. Vermes, Wilbraham, Mass., assignor to Revco Inc., Agawam, Mass.

Filed Jan. 16, 1969, Ser. No. 791,595

Int. Cl. B31b *1/96, 1/98;* **B65b** *57/20*

U.S. Cl. 93—93 **1 Claim**

A machine for accumulating carton blanks into in-seriatim-formed stacks of blanks of predetermined count and delivering the counted stacks as uniformly aligned units of blanks to a delivery station at one end of the machine, the machine comprising: a hopper for supporting a supply of the blanks to be counted, kicker means cooperant with the hopper for the in-seriatim ejecting of bundles of counted blanks from the hopper, an accumulator-aligner for accumulating and aligning a predetermined number of such bundles to form a stack, intermittently openable gate means cooperant with the accumulator-aligner and operably into gate opening position as a predetermined number of bundles in the stack has been attained, first conveyor means for conveying the stack delivered from the hopper by the kicker means to the accumulator-aligner, and second conveyor means for removing the stacks from the accumulator-aligner as the gate means is opened for delivery of the stack to a delivery station at one end of the apparatus.



3,580,146

METHOD OF MAKING ACCURATELY DIMENSIONED SMOOTH-SURFACED MULTI-LAYER CARDBOARD TUBES

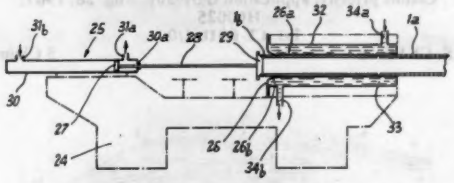
Joseph Biancamaria, Ivry sur Seine, France, assignor to L'-Homme (Societe Anonyme), Paris, France

Filed Feb. 7, 1969, Ser. No. 797,487

Claims priority, application France, Feb. 7, 1968, PV 139 051

Int. Cl. B31c *3/04, 11/04;* **B31b** *1/64*

U.S. Cl. 93—94 **10 Claims**



In order to obtain helically wound multilayer cardboard tubes of accurate diameter and very smooth external surface, the tubes are coated with a thermosetting resin and forced through the bore of a heated jacket to cause (1) curing of the resin and (2) reduction of the tube diameter to the precise desired dimensions. This reduction is taken up by a radially compressible layer of the tube.

3,580,147

VIBRATORY ROAD ROLLER

Benno Kaltenegger, Kurhausstrasse 73—79, 5202 Hennef Sieg, Germany

Filed Aug. 9, 1968, Ser. No. 751,429

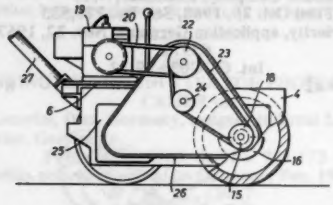
Claims priority, application Germany, Aug. 25, 1967, K63208

Int. Cl. E01c *19/24*

U.S. Cl. 94—50 **16 Claims**

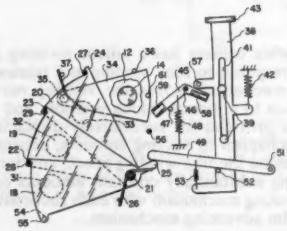
This provides a vibratory road roller having at least two driven roller drums lying one behind the other in the direction of travel. The drums are carried by a rigid frame.

The drums which are placed one behind the other are of different weights. In one embodiment of the invention the roller



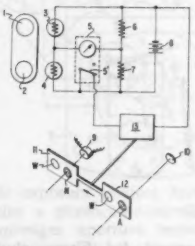
drums are also of different lengths. At least one of the roller drums has a vibration shaft which carries eccentric weights.

3,580,148
PHOTOCHROMIC EXPOSURE CONTROL
Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 1, 1969, Ser. No. 846,817
Int. Cl. G03b *9/02, 11/00;* G02b *5/20*
U.S. Cl. 95—10 **10 Claims**



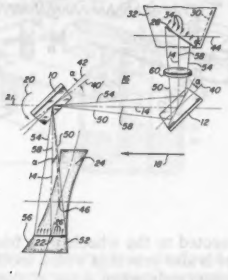
An exposure control system in a camera includes a plurality of transparent photochromic elements that darken as a function of the illumination intensity to which they are exposed. The elements are exposed separately to scene illumination and are then superimposed in alignment with the camera lens and shutter just before the shutter is operated to effect film exposure.

3,580,149
FILTER CORRECTION DEVICE
Shin Fujisawa, Kanagawa, Japan, assignor to Fuji Shashin Film Kabushiki Kaisha, Kanagawa, Japan
Filed Oct. 23, 1967, Ser. No. 677,347
Claims priority, application Japan, Oct. 26, 1966, 41/70217
Int. Cl. G03b *19/00*
U.S. Cl. 95—11 **4 Claims**



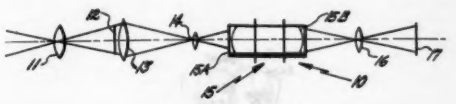
A filter correction device including a pair of filters of different spectral characteristics, each filter of which is moved in and out of alignment with the optical axis of the camera lens system automatically by an electric motor responsive to closure of the normally open switch to achieve color correction in accordance with the spectral characteristics of the illuminated object to be photographed.

3,580,150
PANORAMIC CAMERA WITH FORWARD IMAGE MOTION COMPENSATION BY OPTICAL ROTATION OF IMAGE
John Thaxter Watson, Wellesley Hills, and Kenneth Robinson, Needham, Mass., assignors to Itek Corporation, Lexington, Mass.
Filed Apr. 15, 1968, Ser. No. 721,227
Int. Cl. G03b *29/00*
U.S. Cl. 95—12.5 **5 Claims**



Apparatus for compensating for forward image motion in panoramic cameras by rotating the image about the optic axis of the camera. In an aircraft camera a first scanning mirror is rotated relative to a second scanning mirror about their common axis in order to provide compensation for the forward motion of the plane.

3,580,151
LOW LIGHT LEVEL COLOR PHOTOGRAPHY
Kenneth C. Hudson, Philadelphia, Pa., and Fred E. Shashoua, Cherry Hill, N.J. assignors to The United States of America as represented by the Secretary of the Air Force
Filed Oct. 17, 1968, Ser. No. 768,424
Int. Cl. G03b *33/00*
U.S. Cl. 95—12.20 **2 Claims**

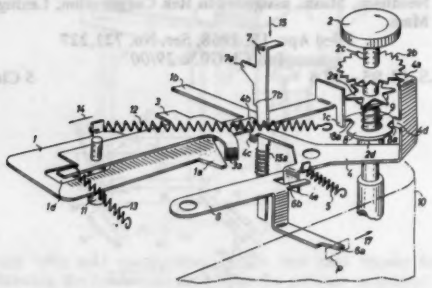


A method and an apparatus for taking color photographs of subjects at very low light levels. A photo-electronic imaging system, including a color encoding filter, an image intensifier tube, and associated optical components is used to form an image of the subjects on black and white film. The film is developed and the resulting transparency then is projected through a decoding filter and associated optical components to form a color image which, if made to impinge upon color film and the film thereafter is developed and printed, results in a color photograph.

3,580,152
PHOTOGRAPHIC APPARATUS
Dieter Engelsmann, Unterhaching; Rolf Schroder, and Erwin Becker, Munchen, Germany, assignors to Agfa-Geuaert Aktiengeselischaft, Leverkusen, Germany
Filed Apr. 11, 1969, Ser. No. 815,358
Claims priority, application Germany, Apr. 19, 1968, A29659
Int. Cl. G03b *1/62, 1/04*
U.S. Cl. 95—31FM **10 Claims**

A still camera wherein a pivotable and reciprocable slide permits operation of the shutter release when the film is

transported by the length of a frame and when the tip of a tracking lever extends into one of a row of perforations on the film. The film transporting wheel is arrested by an arresting lever when the latter is free to engage a ratchet wheel connected to the film transporting wheel. A star wheel which is rigid with the other two wheels can move the slide to inoperative position only when a tooth of the slide extends into one of several notches provided in the periphery of a disc



which is connected to the wheels by a friction coupling. The arresting lever is also provided with a tooth which can engage the ratchet wheel only when a lug of the arresting lever extends into another notch of the disc. When the film is removed, the slide is moved to inoperative position and the arresting lever is caused to engage the ratchet wheel when the transporting wheel is rotated through an angle which is smaller than the angle required to advance the film by the length of a frame.

3,580,153

APERTURE POSITION SELECTING SYSTEM FOR USE WITH MULTIPHOTOGRAPHIC DEVICE

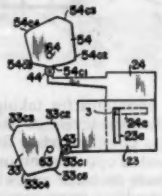
Yoshio Fukushima, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Oct. 2, 1968, Ser. No. 764,507

Claims priority, application Japan, Oct. 11, 1967, 42/65278

Int. Cl. G03b *19/02*

U.S. Cl. 95—36 **14 Claims**



A multiphotographic device has an objective lens positioned to form a real image which serves as an object for a compound second lens. Immediately behind the objective lens are located a pair of superimposed shield plates movable transversely in orthogonal directions. Each plate is provided with a slot extending perpendicular to its direction of movement; the slots defining a rectangular aperture which admits light to the second lens from the first. Motion of the plates is controlled by a pair of cams. Each cam controls the excursion of a shield plate causing the aperture to advance in steps from a starting position to an extreme position while leaving gaps between the steps, and then back to the starting position in steps during a return movement. The aperture, during the return movement, occupies the gaps.

3,580,154

OPERATING MECHANISM FOR MIRROR-REFLEX CAMERA

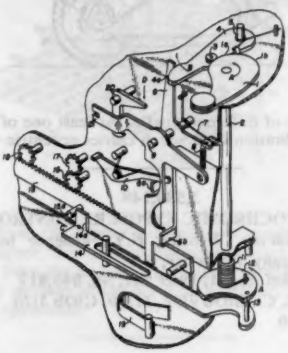
Helmut Ettischer, Ruit/Krs. Esslingen, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 25, 1968, Ser. No. 770,533

Claims priority, application Germany, Nov. 22, 1967, K-63972

Int. Cl. G03b *19/12*

U.S. Cl. 95—42 **8 Claims**



A mirror reflex camera has a mirror pivoting mechanism that is set in response to film winding and released with the shutter. The mechanism moves the viewing mirror from a viewing position to a picture taking position, and a rapid advance lever is provided for successively displacing the film advancing mechanism by varying amounts, depending on the amount of film on the film winding spool, and for simultaneously imparting substantially constant amounts of energy to the mirror pivoting mechanism with each successive displacement of the film advancing mechanism.

3,580,155

DRIVING ARRANGEMENT FOR SINGLE BLADE SHUTTER FOR PHOTOGRAPHIC APPARATUS

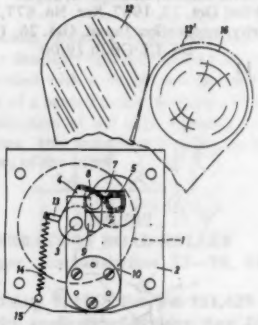
Wolfgang Zahn, Munich; Erlich Nagel, Anzing, and Reinhold Langer, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 7, 1968, Ser. No. 773,985

Claims priority, application Germany, Nov. 16, 1967, A28727

Int. Cl. G03b *9/10*

U.S. Cl. 95—53R **9 Claims**



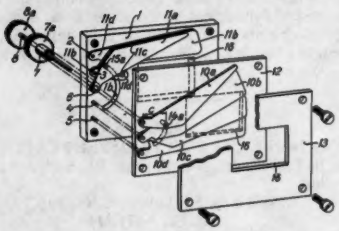
A driving arrangement for filters, shutter blades or analogous light-obstructing elements of photographic cameras or photographic printing apparatus comprises an electromagnet having an armature which is turnable within a

predetermined angle to turn a one-armed lever which is rigid with the light-obstructing element. The motion transmitting connection between the armature and the lever comprises a gear segment on the armature, a gear provided on an intermediate shaft which carries a crank arm, and a pin-and-slot connection between the crank arm and the lever.

3,580,156
SWINGING SECTOR SHUTTER FOR PHOTOGRAPHIC CAMERAS

Peter Loseries, Diez, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany

Filed Dec. 9, 1968, Ser. No. 782,173
Claims priority, application Germany, Dec. 19, 1967, P 15 97 308.7
Int. Cl. G03b *9/26*
U.S. Cl. 95—60 **13 Claims**

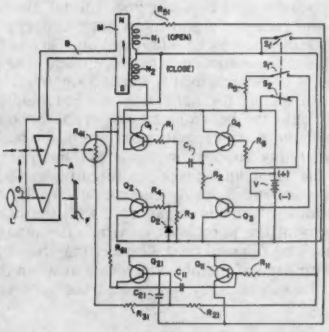


This disclosure pertains to a camera shutter having two swinging sectors. Each sector includes a plurality of separately mounted lamellae actuated by pin and slit connections. The slit-forming edges of each are formed by a single lamella and by a plurality of adjacent lamellae.

3,580,157
AUTOMATIC EXPOSURE CONTROL DEVICE

Oran T. Casebeer, Interlaken, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 7, 1969, Ser. No. 805,174
Int. Cl. G03b *9/04, 19/18*; G05b *6/02*
U.S. Cl. 95—64 **13 Claims**

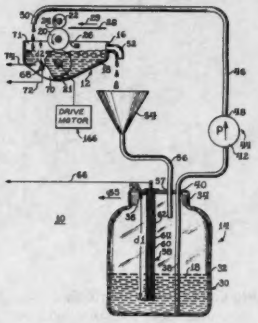


An automatic exposure control device for photographic cameras includes a photocell-controlled multivibrator for varying a diaphragm aperture between minimum light passage and maximum light passage positions. Separate means are provided for automatic positive drive of the diaphragm to its minimum light passage position when the camera is stopped.

3,580,158
LIQUID LEVEL SENSING DEVICE

Peter T. Scholle, Melbourne Beach, Fla., and Samuel L. Webb, Lisle, Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Filed Sept. 29, 1969, Ser. No. 861,574
Int. Cl. G03d *3/12, 7/00, 3/06*
U.S. Cl. 95—89G **1 Claim**



Liquid level sensing apparatus is disclosed for use with liquid developing apparatus including a reservoir of conductive developer fluid. A current flow is maintained between the conductive fluid and an electrode included in the sensing apparatus, immersed in the reservoir of fluid. The depletion of developer fluid below a predetermined level causes the cessation of the current flow, which in turn causes the operation of additional circuitry of the sensing apparatus for, indicating the need for replenishment of the fluid, or for preventing the further operation of the developing apparatus.

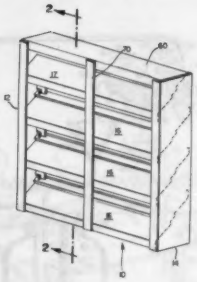
3,580,159
DENTAL X-RAY FILM HOLDER

Jack B. Buck, 1800 South University Drive, Fort Worth, Tex.

Filed Feb. 20, 1969, Ser. No. 800,976
Int. Cl. G03d *3/00*
U.S. Cl. 95—100 **1 Claim**

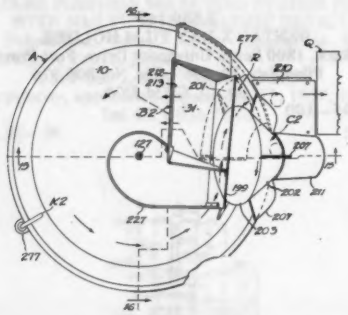
Apparatus for developing individual dental X-ray film consisting of a small processing tank and a holder for a plurality of individual films. The holder includes an elongated member which is H-shaped in transverse section and has a plurality of pairs of inwardly curved indentations formed in marginal portions of two sides thereof. The indentations coincide with the longitudinal edges of the oppositely facing legs of the H. The individual films are arranged transversely of the elongated member and extend laterally beyond the two other sides of the member.

3,580,160
FABRICATED VENTILATOR AND METHOD OF PRODUCING SAME
Francis J. McCabe, P. O. Box 131, Penns Park, Pa.
Filed Apr. 14, 1969, Ser. No. 815,896
Int. Cl. F24f *13/08*
U.S. Cl. 98—121 **12 Claims**



A fixed blade ventilator is fabricated from blades which interlock with side channels to form, without more, a unified structure.

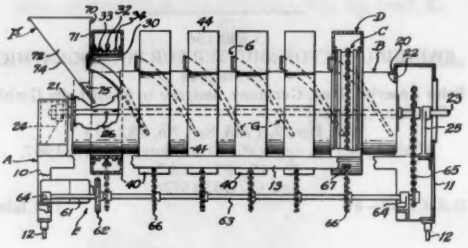
3,580,161
APPARATUS FOR PROCESSING CHEESE CURD INTO HOMOGENOUS CHEESE
Nicholas E. Pontecorvo, Tarzana, Calif. (1548 18th St., Santa Monica, Calif. 90404)
Continuation-in-part of application Ser. No. 712,715, Mar. 13, 1968, now Patent No. 3,476,036. This application Aug. 11, 1969, Ser. No. 849,132
Int. Cl. A23c *19/00*
U.S. Cl. 99—243 **8 Claims**



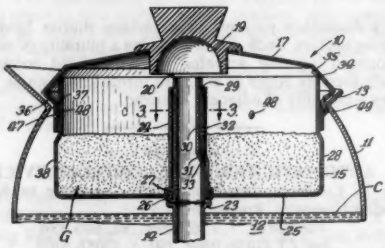
Cheese processing apparatus comprising a circular tub containing heated water for softening raw cheese curd delivered to it by a fixed hopper, the tub being rotatable to carry the cheese in a circular path of nearly 360° to an elevating conveyor operating adjacent the back side of the hopper to remove the softened curd from the bottom of the tub and elevate it over the tub rim to a kneading unit of the apparatus.

3,580,162
CHEESE KNEADING APPARATUS
Nicholas E. Pontecorvo, Tarzana, Calif. (1548 18th St., Santa Monica, Calif. 90404)
Filed Nov. 3, 1969, Ser. No. 873,265
Int. Cl. A23c *19/12*
U.S. Cl. 99—243 **10 Claims**

Presoftened and moistened cheese curd is kneaded into homogenous consistency such as Mozzarella, by feeding it consecutively into successive annular kneading chambers defined between the cylindrical internal surfaces of a series of axially spaced substantially coaxial rings and the surface of a cylindrical mandrel projecting through the series of rings in eccentric relation thereto, the curd moving circumferentially through a restricted pass between areas of closest spacing of the opposed cylindrical surfaces into a wider area of a respective chamber, from which it is deflected axially to a succeeding chamber while carried on the surface of the mandrel.



3,580,163
VARIABLE CAPACITY COFFEE PERCOLATOR
Claude S. Farrell, Jr., Northbrook, Ill., assignor to Cory Corporation
Filed Feb. 5, 1969, Ser. No. 796,793
Int. Cl. A47j *31/04*
U.S. Cl. 99—310 **32 Claims**



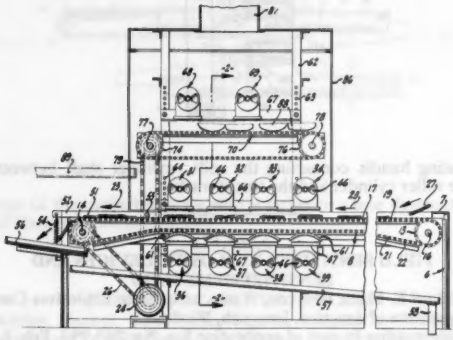
In a percolator having a pump stem for carrying a brewing basket adjacent the upper open end of the receptacle, or pot, cooperating means are provided on the stem and basket for selectively positioning the basket in a normal brewing position within the receptacle and in an extra-capacity position upwardly thereof whereby an additional quantity of beverage such as coffee may be brewed in the receptacle. The percolator includes a cover removably carried on the basket and provided with means for deflecting the hot pumped water downwardly onto the beverage charge in the basket in each of the normal and extra-capacity positions of the basket.

The cooperating support means may comprise shoulder means on the stem and basket. Alternatively, the support means may comprise a spring clip carried by the stem and having portions selectively engageable with the basket. The extra capacity of the percolator may be substantial, such as over 4 cups. The sidewall of the basket may be imperforate to preclude spillage of the hot water such as when the basket is raised to be substantially outward of the open top of the receptacle.

3,580,164
HAMBURGER COOKING MACHINE
Edward D. Baker, Belmont, Calif., assignor to National Industrial Manufacturing
Filed Oct. 9, 1969, Ser. No. 865,102
Int. Cl. A47j *37/00*
U.S. Cl. 99—339 **10 Claims**

A hamburger cooking machine includes a cooking element of the gas-fired, radiant energy, surface combustion type

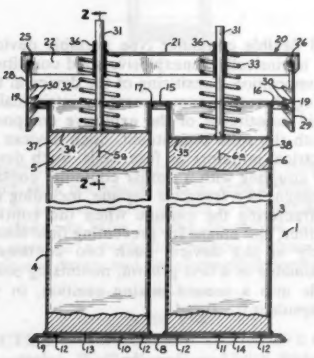
mounted on a frame in conjunction with an openwork chain patty conveyor arranged with both the upper and lower runs of the conveyor directly exposed to the cooking element. Means on the frame advance the conveyor, and a patty thereon, with respect to the cooking element to grill the patty. A bun conveyor is also mounted on the frame and is similarly moved with respect to a comparable source of heat so that a bun thereon is warmed or toasted. The hamburger patty and the bun are simultaneously conveyed through the machine, and are discharged at about the same time for assembly into a hamburger.



3,580,165
MEAT MOLD

Ralph M. Foldenauer, Chicago, Ill., assignor to Bloomer-Fiske, Inc.

Filed June 6, 1969, Ser. No. 831,039
Int. Cl. A47j *27/20*
U.S. Cl. 99—351 **3 Claims**

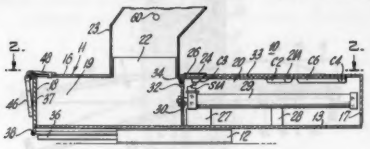


A multiple cavity meat mold, wherein each cavity is open at both ends, has a closure-forming pressure plate for one end of each cavity, each plate being independently biased by a coil spring and provided with a guide pin, coaxial with the coil spring, that fits into a guide sleeve on the spring backing. The plates maintain the ends of the meat in the mold cavities perpendicular to the axis of the associated cavity during the cooking and chilling. The plates are held onto the mold body by a ratchet arrangement. At the bottom of each mold cavity is a removable closure end plate.

3,580,166
COMPACTION APPARATUS

Joseph F. Longo, New Canaan, Conn., assignor to International Dynetics Corporation, Norwalk, Conn.

Filed May 8, 1969, Ser. No. 823,059
Int. Cl. B30b *15/16*
U.S. Cl. 100—49 **22 Claims**

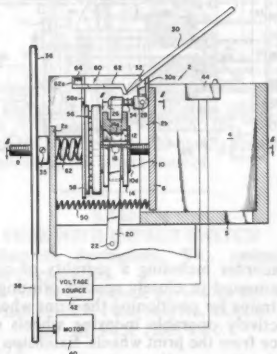


A waste compactor includes a horizontally extending compacting chamber with a cantilevered open-ended front section closed by an openable first gate and a chute communicating with a rear upper feed opening. A ram is hydraulically motivated along the chamber between advanced, retracted and intermediate positions. An electrical network controls the ram when the first gate is closed and material sensed in the chute to reciprocate the ram between intermediate and retract positions until the hydraulic pressure exceeds an adjustable value at the intermediate position and to reciprocate the ram between the retracted position and a point rearwardly of the intermediate position when hydraulic pressure exceeds a second predetermined value. Upon opening of the first gate the ram can be fully advanced.

3,580,167
CAN CRUSHING APPARATUS

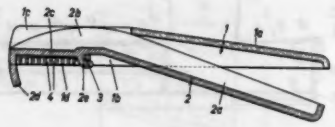
Herbert H. Simshauser, 5532 Beechwood, Ravenna, Ohio

Filed Sept. 19, 1969, Ser. No. 859,411
Int. Cl. B30b *15/18, 15/22*
U.S. Cl. 100—52 **11 Claims**



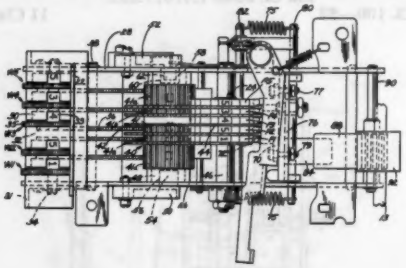
Apparatus for crushing waste objects such as cans, containers, bottles and the like, including motor-driven screw and nut means for displacing a crusher member in a given direction to compress waste objects contained in a crushing chamber. The invention is characterized by the provision of quick-release means for disengaging the nut means from the screw means to permit instantaneous return of the crusher member to its initial retracted position by return spring means. In the preferred embodiment of the invention, the nut means is of the split-nut type including nut sections that are automatically locked into threaded engagement with the screw by an axially shiftable collar upon closure of a cover member upon the crushing chamber. Means responsive to the crushing pressure near the end of the crusher stroke are provided for disengaging the nut sections from the screw means.

3,580,168
HAND SQUEEZER FOR FRUITS AND VEGETABLES
Karl Zysset, Hauptstrasse 31, 3250 Lyss, Switzerland
Filed Aug. 19, 1969, Ser. No. 851,185
Claims priority, application Switzerland, Aug. 28, 1968, 12868/68
Int. Cl. B30b 7/00
U.S. Cl. 100—234 5 Claims



Squeezer has two levers pivotally connected together nearer one end than the other so as to divide the levers into two arms each of unequal length, of which the longer arms constitute the handle and the shorter arms respectively the receptacle for the fruit or vegetable and a plunger, and either the bottom of the receptacle or of the plunger is provided with holes through which the juice escapes.

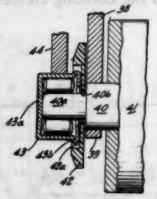
3,580,169
SETTABLE DRUM SERIES PRINTING WHEEL ARRANGEMENT
John A. Maul, Lyndhurst; James T. Zofchak, Mentor, and David D. Anderson, Richmond Hts., Ohio, assignors to Addressograph Multigraph Corporation, Cleveland, Ohio
Division of Ser. No. 698,871, Jan. 18, 1968, Pat. No. 3,508,488.
Filed Oct. 8, 1969, Ser. No. 864,643
Int. Cl. B41j 5/02, 1/22
U.S. Cl. 101—110 2 Claims



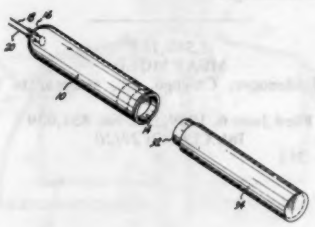
A data recorder including a plurality of coaxial settable print wheels nested in closely spaced printing relation, and rotary gear trains for positioning the print wheels under control of selectively operable indexing wheels spaced only a short distance from the print wheels. Extension gears are provided for laterally spreading out the rotary gear train from the closely positioned print wheels to the indexing wheels, thereby spreading apart adjacent indexing wheels sufficiently to allow for operator finger contact with the indexing wheels individually to permit independent movement thereof.

3,580,170
SUPPORT ASSEMBLY FOR A TRAVEL CYLINDER HAVING ROLLING CONTACT WITH THE BED OF A PRINTING MACHINE
George R. Furman, Glenham, N.Y., assignor to Texaco Inc., New York, N.Y.
Filed Aug. 30, 1968, Ser. No. 756,440
Int. Cl. B41f 3/04
U.S. Cl. 101—269 6 Claims

A roller cylinder support assembly consisting of an outboard low friction bearing housing which is nested in an inboard recessed thrust washer and a shaft of appropriate dimensions for supporting the same extending axially through the roller cylinder, the roller cylinder bracket yoke of the actuating handle contacting the roller cylinder shaft between the roller cylinder and the thrust washer.



3,580,171
FIELD SENSITIZED EXPLOSIVE DEVICES AND SENSITIZING METHOD
Michael E. Maes, Bellevue, Wash., assignor to Explosives Corporation of America, Issaquah, Wash.
Continuation-in-part of application Ser. No. 703,994, Feb. 8, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 631,123, Apr. 17, 1967, now Patent No. 3,419,443, dated Dec. 31, 1968. This application Feb. 25, 1969, Ser. No. 805,987
Int. Cl. F42b 3/10, 3/18
U.S. Cl. 102—28 23 Claims

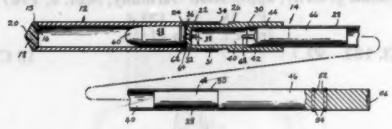


Rigid and flexible container type portable devices incorporating an intrinsically nonexplosive solid constituent of an explosive composition. Sensitizing of the device at the site of use by adding thereto a complementary intrinsically nonexplosive liquid constituent of the explosive composition, for admixing with the solid constituent. Such devices including built-in electrical initiators or fuse wells. Such devices constructed for coupling with a similar container containing the liquid constituent in a frangible capsule, including means for cutting or fracturing the capsule when the containers are moved together, and means for preventing fluid leakage from the assembly or the device. Such two container devices which are joinable in a first prearm, nonmixing position, and are movable into a second mixing position, in which the frangible capsule is fractured.

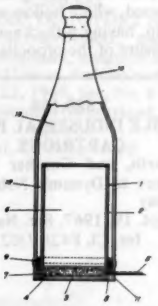
3,580,172
UNDERWATER PROJECTILE FOR FIRING A CARTRIDGE UPON IMPACT
Grover E. Hendricks, 2241 Lake St., Niles, Mich.
Filed Nov. 27, 1968, Ser. No. 779,371
Int. Cl. F42b 13/54; A01k 81/00
U.S. Cl. 102—48 5 Claims

A projectile including an elongated tubular body having an open fore end portion defining a gun bore and an intermediate portion defining a chamber communicating with the gun bore for receiving an ammunition cartridge. A firing pin is slidably disposed within the tubular body rearwardly of the chamber therein and is adapted to be shifted forwardly

within the tubular body to engage the primer of an ammunition cartridge housed within the chamber upon fore end contact of the projectile body with a target to cause detonation of the ammunition cartridge.



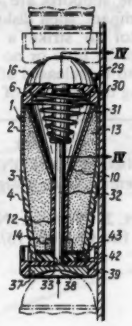
3,580,173
EXPLOSIVE TABLE DECORATION
Adrien Machet, Saint-Denis, France, assignor to Etablissements MACHET, Saint-Denis, France
Filed Mar. 26, 1969, Ser. No. 810,608
Claims priority, application France, Apr. 4, 1968, 146984
Int. Cl. C06d *1/00*
U.S. Cl. 102—37.2 **2 Claims**



In an explosive table decoration covered with decorative cover which does not enable it to be seen at first glance what it actually is, and containing objects to be distributed and an explosive charge to blow out the decorative cover and the objects in question, a particular method of connection of the actual explosive device and the aforesaid decorative cover.

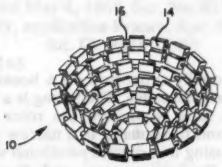
3,580,174
PROJECTILE WITH HOLLOW EXPLOSIVE CHARGE
Robert Apotheloz, Wallisellen; Hans-Ulrich Bigler, Opfikon, and Rene Kessler, Zurich, Switzerland, assignors to Werkzeugmascninenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland
Filed Feb. 18, 1969, Ser. No. 800,161
Claims priority, application Switzerland, Mar. 7, 1968, 3494
Int. Cl. F42b *25/20, 25/16*
U.S. Cl. 102—56 **4 Claims**

A projectile having a body with an explosive charge having a cavity. A lagging is located in the cavity and a passage in the charge extends centrally rearwardly from the cavity. A primary detonator for the charge is before firing located in a position of rest and after firing is located in an ignition position at the front end of the passage. A secondary detonator is situated in its position of rest in the cavity and a rod extends through the passage having the secondary detonator fastened



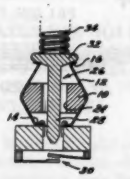
to the forward end thereof and which on firing is adapted to slide to the rear in the passage.

3,580,175
FRAGMENTATION EXPLOSIVE DEVICE
James E. Kenney, and Richard J. Ashenfelter, both of Toledo, Ohio, assignors to Gerity-Schultz Corporation, Toledo, Ohio
Filed Sept. 19, 1968, Ser. No. 760,761
Int. Cl. F42b *13/48*
U.S. Cl. 102—67 **4 Claims**



A fragmentation explosive device consisting of a plurality of projectiles cast within matrix material which vaporizes at the explosion temperature, wherein the projectiles are formed of a length of strip material having frangible zones at spaced intervals along the length thereof.

3,580,176
FUZE WITH IMPACT SWITCH
George T. Boswell, Springfield, Va., assignor to The Susquehanna Corporation
Division of Ser. No. 647,355, June 20, 1967, Pat. No. 3,457,382.
Filed Feb. 28, 1968, Ser. No. 823,223
Int. Cl. F42c *1/08, 9/10*
U.S. Cl. 102—75 **17 Claims**



An impact weight is releasably engaged, supported, and caged by a plurality of springlike supports which also releasably engage a spring-loaded operator and hold it in the cocked position. The weight moves in response to impact or

a predetermined level of vibration to dislodge the supports and allow the operator to be driven home by the spring.

In the fuze, a safety slide locks the supports until removed by the action of an explosive or mechanical delay mechanism. Once the supports are unlocked the weight is free to move upon impact, then dislodging the supports and allowing the operator to strike a detonator to fire the weapon. Should there be little or no impact, the delay train causes the operator to be released after a predetermined interval notwithstanding the position of the supports.

3,580,177

ROTATIONALLY RESPONSIVE DEVICE

Fred Krahulec, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 2, 1968, Ser. No. 764,391
Int. Cl. F42c *15/26*
U.S. Cl. 102—79 **6 Claims**

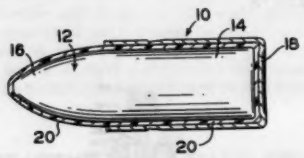
A rotor is rotationally supported on a housing and spring urged in a first rotational sense. The spring is a multiconvolution resilient steel tape wound on the rotor and disposed between the rotor and the housing in a narrow annular space. Rotation of the housing in a second rotational sense urges the rotor to unwind the spring tape and thereby rotate a predetermined distance. A configuration for a safe and arm mechanism is disclosed.

3,580,178

EXTERNALLY LUBRICATED PROJECTILE AND METHOD OF MAKING SAME

Paul J. Kopsch, 710 Faster Park Road West; Daniel Turcus, Jr., 1019 W. 38th St., Lorain, and Donald F. Ward, Telegraph Road, South Amherst, Ohio

Filed Oct. 31, 1967, Ser. No. 679,391
Int. Cl. F42b *11/14*
U.S. Cl. 102—92.2 **3 Claims**



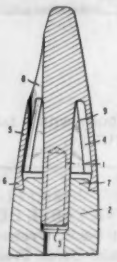
A bullet having a core which is secured to a jacket. At least the piercing end or extremity of the core is coated with a low-friction fluorocarbon resin, such as polytetrafluoroethylene. The resin may also be used to secure the jacket to the core.

3,580,179

AMMUNITION FOR TARGET PRACTICE OR OTHER SHORT-RANGE PURPOSES

Heinz Gawlick; Rudolf Stahlmann, Furth, and Hans Umback, Stadeln, Kronacher, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Sept. 6, 1968, Ser. No. 757,898
Claims priority, application Germany, Sept. 6, 1967, P 15 78 123.4
Int. Cl. F42b *11/18*
U.S. Cl. 102—92.7 **13 Claims**



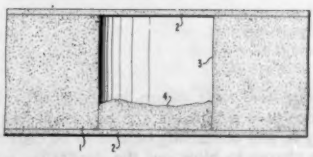
Projectiles designed for practice or other limited-range purposes, including a tip which will disintegrate and/or be jettisoned from the body of the projectile and laterally deflected from the path thereof shortly after exit from the barrel of the firearm, which tip is constructed with a longitudinal cross section deviating from rotational symmetry and/or an annular hollow space surrounding the central core thereof and extending rearward, which hollow space is defined by the outer shell of the tip, having a thickness such that it may be ruptured by the pressure of the propellant gases.

3,580,180

CONSUMABLE INDUSTRIAL PROPELLANT CARTRIDGE

Heinz Gawlick, Furth, and Gunther Marondel, Erlangen, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Sept. 19, 1967, Ser. No. 668,797
Int. Cl. F42b *1/02*
U.S. Cl. 102—101 **7 Claims**



A consumable industrial propellant cartridge having a form-stabilized annular propellant charge body filled with loose ignitor composition and closed at both ends with a relatively thin powder foil coated on its inside surface with a percussion-sensitive material, for example, tetrazene or tetrazene-trizinate.

3,580,181

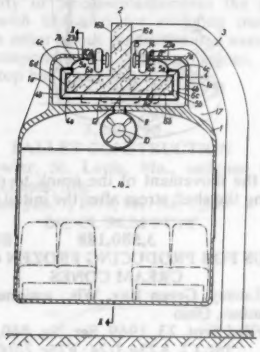
SURFACE-EFFECT TRANSPORT SUPPORT SYSTEMS

Jean Henri Bertin, Neuilly-sur-Seine, and Francis Marie Jean Croix-Marie, Viry-Chatillon, France, assignors to Bertin & Cie, Plaisir, France

Filed Dec. 29, 1969, Ser. No. 888,316
Claims priority, application France, Dec. 27, 1968, 181,381
Int. Cl. B60v *3/04*, *1/06*
U.S. Cl. 104—23FS **28 Claims**

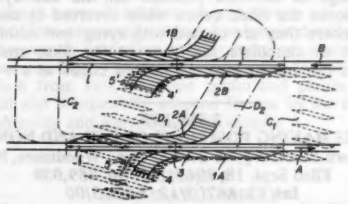
A transport system comprising a surface-effect vehicle movable along a prepared track, the vehicle having means

for defining a first fluid cushion of predetermined pressure below ambient pressure and cooperating with the track, and second means combining with the first means to define a



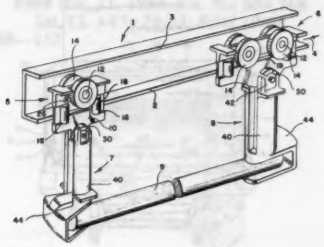
second fluid cushion of a pressure lower than said predetermined pressure, so that the vehicle cooperates with track through superimposed fluid cushions.

3,580,182
VARIABLE-SPEED TRANSPORT APPARATUS
Gabriel Bouladon, St.-Loup/Bersoix, and Paul Zuppiger, Athenaz/Geneva, Switzerland, assignors to Battelle Memorial Institute, Carouge/Geneva, Switzerland
Filed Apr. 22, 1969, Ser. No. 818,241
Claims priority, application Switzerland, Apr. 26, 1968, 6280/68
Int. Cl. B65g *17/06*
U.S. Cl. 104—25 **11 Claims**



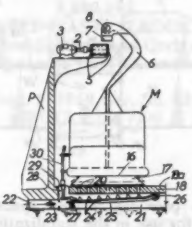
A variable-speed passenger transporter for conveying passengers from a stationary surface to a belt moving at constant speed, which includes a plurality of rhomboid platforms driven along guide means in a closed circuit along a section of which the platforms are in contacting relationship to form a moving floor. Along the initial portion of this section the platforms travel at low speed and at right angles to their center lines towards the belt but at an angle thereto. Along the following portion they are shifted along one another without changing their orientation to increase their speed until they come alongside the belt. The platforms then move with the belt at more or less the same speed as the latter and at an angle thereto, the oblique ends of the rhomboid platforms providing the moving floor with a substantially straight edge at least alongside the belt. A reverse, decelerating, arrangement and various modified constructional forms are also provided.

3,580,183
TROLLEY AND HANGER APPARATUS
Richard E. Nearman, Mount Airy, Md., assignor to Automated Handling Systems, Inc., Washington, D.C.
Filed May 13, 1968, Ser. No. 728,513
Int. Cl. B61b *3/00*
U.S. Cl. 104—111 **13 Claims**



Flat trolley bodies having perpendicular tabs along upper edges thereof for mounting axles and guide rollers to prevent the trolley bodies from scraping along tracks, hangers having integrally formed arcuate bumpers, and combinations of trolleys and hangers having motion-limiting stops near hinged interconnections are described herein.

3,580,184
TRANSPORTATION SYSTEMS
Francois Louis Giraud, Plaisir, France, assignor to Societe De L—Aerotrains, Paris, France
Filed May 4, 1969, Ser. No. 813,597
Claims priority, application France, Apr. 5, 1968, 147,270
Int. Cl. B61b *13/08*
U.S. Cl. 104—165 **17 Claims**



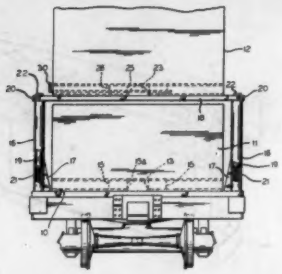
The present invention relates to improvements in transportation systems and in particular passenger transportation systems of the kind in which the payload carrier is borne by a conveyor arrangement, the improvements comprising means for automatically or manually engaging said payload carriers with, and disengaging them from, the conveyor means by the use of ground-effect arrangements in association with special track formations.

3,580,185
SYSTEM AND APPARATUS FOR HOLDING FREIGHT CONTAINERS TO VEHICLES AND THE LIKE
John Bridge, 407 S. Dearborn St., Chicago, Ill.
Filed Aug. 27, 1968, Ser. No. 755,677
Int. Cl. B65j *1/22*
U.S. Cl. 105—366 **8 Claims**

System for locating and locking freight containers on vehicles such as freight cars, trailers, trucks, ships decks and the like. A series of loaded containers may be mounted on the vehicle deck, either in alignment with each other or one above the other. The loaded containers are located and retained to the deck by a dome lock accommodating limited vertical movement of the container but relieving the container from shocks and twisting forces of the vehicle deck.

Low-height containers are mounted directly on the deck

and retained to the deck by dome-centering devices extending upwardly of the deck. Crossbeams extend over the low-height containers and form supports for upper containers. These beams have centering domes thereon mounted at their ends for controlled vertical movement with respect to the deck.



In another form of the invention the domes are at opposite sides of the deck and are placed along the deck to take care of containers of various lengths and are mounted on the deck for vertical shifting movement in controlled paths.

In still another form the domes are mounted on the lower container, and a second container is supported directly on the lower container.

3,580,186

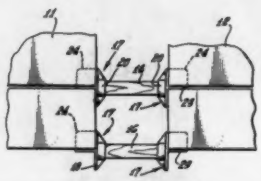
CARLOADING BOX SPACERS

Harold C. Pierce, 1527 Ganesha Place, Pomona, Calif.

Filed Apr. 15, 1968, Ser. No. 721,257

Int. Cl. B61d *45/00*

U.S. Cl. 105—369 **10 Claims**



The invention provides a new spacer component and spacer assembly for use in the stabilization of carload boxes during transit, the assembly comprising an elongated spacer member carrying at one or each of its ends a molded plastic attachment having a body portion extending normal to the spacer and held thereto at one side, and having web means projecting from the opposite side of the body for reception between loaded boxes.

3,580,187

LOAD TIEDOWN TENSIONER

Lawrence P. Marks, Brown Deer, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

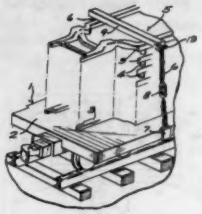
Filed July 2, 1968, Ser. No. 742,045

Int. Cl. B61d *45/00;* **B60p** *7/08*

U.S. Cl. 105—369 **8 Claims**

The present disclosure relates to tiedown means. A stack of vehicle frames are mounted on a bed. A box beam is disposed over the frames or integrated into the bed. A pair of parallel torsion shafts having a high spring rate are mounted in the box beam. The first shaft is fixed at one end to the beam end wall and protrudes from the opposite wall. A crank is secured to the free end of the first bar and disposed between a pair of stop elements on the end wall. The shaft is prestressed to engage the one stop with a selected stored energy with the holding rotation of the arm increasing the stress. The second shaft is similarly constructed, but oppositely disposed to dispose the crank to the opposite end of the assembly.

Suitable straps or chains are interconnected to the cranks to clamp the load to the bed. A one-way locking means selec-



tively limits the movement of the crank to prevent pivoting and increasing the shaft stress after the initial setting.

3,580,188

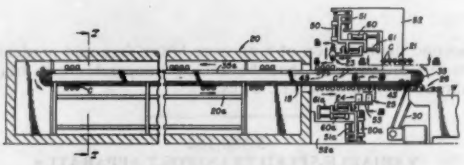
APPARATUS FOR PRODUCING FROZEN COATED ICE-CREAM CONES

Thomas H. Lutsey, Green Bay, Wis., assignor to Big Drum, Inc., Columbus, Ohio

Filed Sept. 23, 1969, Ser. No. 860,377

Int. Cl. A23g *3/24;* **F25c** *7/04*

U.S. Cl. 107—1A **8 Claims**



Apparatus for making frozen edible articles, such as frozen ice cream cones of the type comprising a pastry container or cone having frozen ice cream filling and extending from the mouth end thereof, with a coating of chocolate and nuts on the protruding ice cream. The apparatus includes an endless conveyor which receives the upright cones to be filled with ice cream, and progressively moves the upright cones to a filling station where they are filled with ice cream that extends from the upper mouth end thereof; moves the filled cones through an elongated freezing chamber from which they emerge in inverted position on the conveyor fully frozen; moves the filled cones while inverted to successive stations where they are coated with syrup and edible particles, such as chocolate and nuts or the like; and finally discharges the frozen inverted coated cones at a wrapping station.

3,580,189

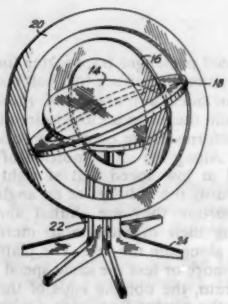
TABLES HAVING POSITIONS OF USE AND NONUSE

Edith Brown Eisenberg, 48 Brower Ave., Woodmere, N.Y.

Filed Sept. 18, 1969, Ser. No. 859,038

Int. Cl. A47f *5/12;* **A47b** *3/00*

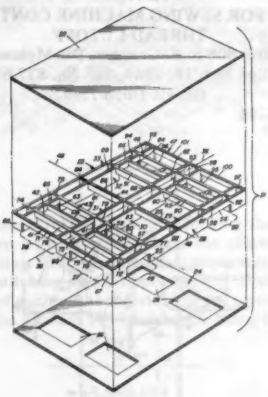
U.S. Cl. 108—3 **9 Claims**



A table which has movable and stationary components coacting to provide for the table a position of use and a posi-

tion of nonuse. The table includes a tabletop made up of a plurality of these components which closely surround each other and are located in a common plane when in the position of use. These components include an inner stationary section of the tabletop and a plurality of endless components one surrounding the other and including an inner endless component which directly surrounds the stationary inner section. A plurality of pivots interconnect the several components one with the next for swinging movement with respect to each other about predetermined axes for situating the several components in different planes, respectively, when the tabletop has a position of nonuse.

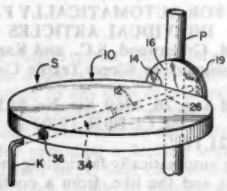
3,580,190
PALLET CONSTRUCTION
Timothy J. Fowler, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Jan. 7, 1970, Ser. No. 1,269
Int. Cl. B65d *19/18*
U.S. Cl. 108—58 **10 Claims**



A substantially rectangular pallet which can be raised and transported by forklift truck arms inserted through any one of the four side edges thereof and which can span across its narrow width. The pallet has a top deck, a bottom deck, and a structural network mediate therebetween which all coact together. The structural network has longitudinally extending and transversely extending stringer members interconnecting with one another. The pallet construction is well suited for formation from two, or three preformed pieces of plastic material and is especially adapted for use by the food industry in shipping and warehousing foodstuffs. ,

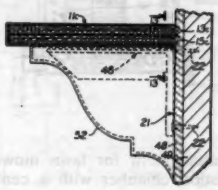
---

3,580,191
REMOVABLE SHELF
Thomas M. McDonnell, 11 N. 4th Ave., Maywood, Ill.
Filed Mar. 2, 1970, Ser. No. 15,350
Int. Cl. A47b *5/00*
U.S. Cl. 108—152 **10 Claims**



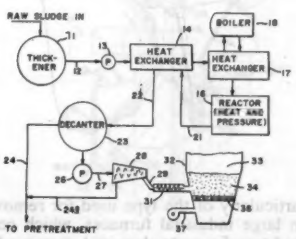
A shelf device adapted to be removably attached to a support extending at any angle in a vertical plane, comprising: a table, a retaining plate secured to one side of the table, a clamp carried by the table, and means carried by the table for moving the clamp toward and away from the retaining plate for clamping the support therebetween.

3,580,192
COMPOSITE MANTLE SYSTEM
Louis Davidson, 24 Waterview Road, Oceanside, Long Island, N.Y.
Filed Dec. 11, 1969, Ser. No. 884,268
Int. Cl. A47g *29/02*; **E04f** *19/08*
U.S. Cl. 108—152 **8 Claims**



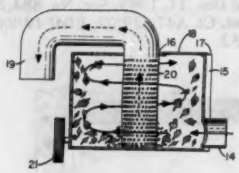
This invention is a composite mantle system for providing a room with a simple shelf mantle which can be added to from time to time to make a more elaborate mantle system and with provision for including a simulated fireplace under the mantle as part of the mantle system. Most parts are compatible with one another and constructed so that installations and additions can be made on a modular "do-it-yorself" basis, and most of the parts are designed for construction from heavy kraft paper or corrugated paperboard, or plastic materials, or a combination of them, to provide an inexpensive form of the invention. Combinations of parts and connecting brackets provide for additions without having to tear out previous constructions to permit the additions to the system.

3,580,193
HEAT TREATED WASTE SLUDGE DISPOSAL
Robert P. Logan, West Redding, and Orris E. Albertson, Norwalk, Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.
Filed Sept. 5, 1969, Ser. No. 855,633
Int. Cl. F23g *7/00*
U.S. Cl. 110—8 **20 Claims**



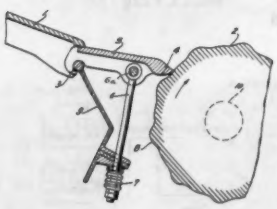
Sewage sludge is pressure cooked by heat exchange to 350—400° F. at a pressure sufficient to prevent evaporation for approximately 30 minutes to free bound cell water. The freed water is decanted and the remaining sludge is dewatered by centrifuge or filter to a very dry cake having a solids content of 35 to 75 percent. The cake is continuously fed to a fluidized bed combustion chamber for autogenous combustion wherein the sludge is reduced to inert burned exhaust gases and finely divided ash entrained with the gases. The dry cake readily crumbles into small pieces and may be screw fed or milled and blown into the combustion chamber. The high solids content, crumbly nature and nonordorous character of the cake simplifies feeding requires no auxiliary fuel after start up, or preheating of combustion air and decreases the size and capital cost of the combustion reactor.

3,580,194
LEAF BURNER ATTACHMENT FOR LAWN MOWERS
Harold Withers, 35 Ohio Ave., Poland, Ohio
Filed Nov. 13, 1969, Ser. No. 876,355
Int. Cl. F23g *9/00*
U.S. Cl. 110—18 4 Claims



A leaf burner attachment for lawn mowers includes a cylindrical combustion chamber with a centrally disposed vertically standing perforated vent stack which extends from a bottom portion of the cylindrical combustion chamber and through a top portion thereof, leaves and air are introduced at one side of the cylindrical combustion chamber near the bottom thereof through an opening which communicates with a duct positioned on a tangent with respect to the wall of the cylindrical combustion chamber so that air and leaves introduced into the cylindrical combustion chamber will spin centrifugally therein and around the centrally disposed perforated vent stack.

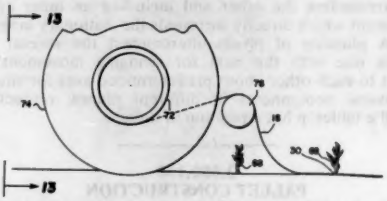
3,580,195
GRATE FOR INDUSTRIAL FURNACES
Johannes Josef Martin, Leopoldstrasse 248, Munich 23, Germany
Filed Apr. 1, 1969, Ser. No. 811,765
Claims priority, application Germany, Apr. 6, 1968, P-P 17 51 126.1
Int. Cl. F23b *1/24*
U.S. Cl. 110—35 11 Claims



A grate, particularly of the type used for removing waste material from large industrial furnaces, which comprises a movable, biased transfer grate element between a fixed grate element and a rotary grate element. The transfer element is in sliding contact with the rotary grate element.

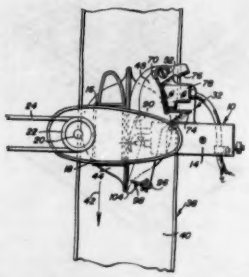
3,580,196
PLASTIC MULCH
Earston Arthur Lofgreen, Coolidge, Ariz., assignor to Occidental Petroleum Corporation
Filed May 27, 1968, Ser. No. 732,226
Int. Cl. A01g *1/00*
U.S. Cl. 111—1 2 Claims

An agronomic mulch sheet and method comprising a flexible mulch sheet having first openings spaced a distance equaling the desired spacing of plants and release portions in said sheet whereby the first openings may be enlarged when they are pulled upwardly over partially grown plants in order to remove the sheet from a plant row; the method comprising preliminary planting of seeds in closely spaced relation, and



the growth of plants through areas only covered by said openings in said sheet.

3,580,197
SWITCH FOR SEWING MACHINE CONTROL AND THREAD CUTOFF
Angelo Mascaro, 808 S. E. Granger, Des Moines, Iowa
Filed Nov. 18, 1969, Ser. No. 877,659
Int. Cl. D05b *13/02*
U.S. Cl. 112—11 9 Claims

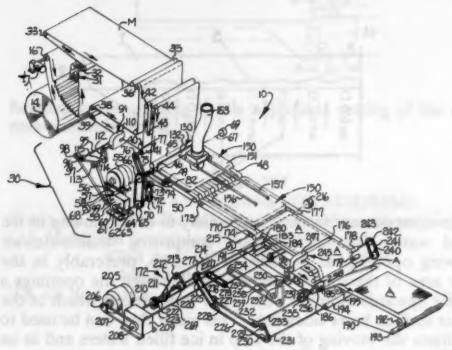


A spring-urged lever oscillatably supported from a bag closing sewing machine head and including a free end swingable between first retracted and second extended positions on opposite sides of a feed path along which bags are fed into and discharged from the sewing machine. The lever is spring-biased toward the extended position thereof and its free end includes knife structure for cutting the thread chain extending rearwardly from a bag discharged from the sewing machine as the free end of the lever swings across the feed path of the machine. The base end of the lever has a switch operatively associated therewith for opening the electrical circuit to the electric motor of the sewing machine whenever a bag to be sewn by the machine is not disposed within a predetermined zone extending along the feed path on both sides of the sewing machine head.

3,580,198
APPARATUS FOR AUTOMATICALLY FABRICATING INDIVIDUAL ARTICLES
Richard K. Teed, Greenwood, S.C., and Karl W. Klose, Findlay, Ohio, assignors to Riegel Textile Corporation, Ware Shoals, S.C.
Filed Aug. 26, 1969, Ser. No. 853,225
Int. Cl. D05b *19/00*
U.S. Cl. 112—121.11 14 Claims

Apparatus for automatically fabricating individual articles, such as blankets and the like, from a continuous length of textile material comprising the following component parts. Supply means supplying a continuous length of textile material. First interrelated, intertimed feeding means feeding the continuous length of material from the supply means in an elongate path of travel along a longitudinally extending axis

through the apparatus. First and second driven stitching means applying lines of stitching along the longitudinal edges of the continuous length of material into a plurality of successive individual articles of a predetermined length. Turning means successively turning each individually cut article 90° for continued travel through the apparatus. Second interrelated, intertimed feeding means receiving the individually cut



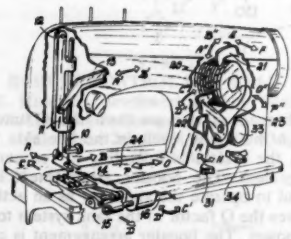
articles from the turning means and feeding them in a continued elongate path of travel along the aforesaid longitudinally extending axis through the apparatus. Third and fourth driven stitching means applying lines of stitching along the cut edges of each of the individually cut turned articles so that each of the articles will be stitched along all four of its edges.

3,580,199

EMBROIDERY STITCHING SEWING MACHINE

Luigi Vigorelli, 80, Viale Partigiani, 27100 Pavia, Italy

Filed May 5, 1969, Ser. No. 822,862
Claims priority, application Italy, May 8, 1968, 16231A/68
Int. Cl. D05b *3/02*
U.S. Cl. 112—158 **8 Claims**



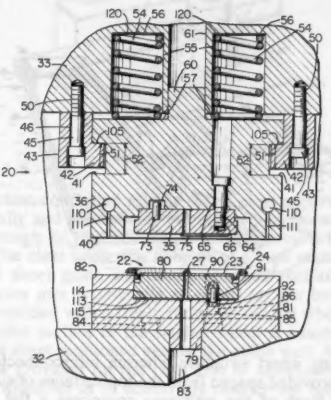
The disclosure relates to an embroidery stitching sewing machine in which a laterally oscillatable needle-bar can be selectively connected to any cam of a plurality of cams for providing zigzag and ornamental stitching, and in which a work fabric feeding device can be automatically controlled by cam means for providing a feeding sequence including forward and rearward steps. Said cam means comprise one cam of such cam track profile to provide a sequence comprising two steps forward and one step backward to produce a stitching wherein in any stitch pitch three sewing stitches are present, the cams of said plurality providing ornamental and utility embroidery and zigzag patterns compatible with said sequence.

3,580,200

APPARATUS FOR AND METHOD OF FORMING A SHEETLIKE WORKPIECE

Daniel S. Cvacho, and Edward H. Fritchey, Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed July 17, 1968, Ser. No. 745,593
Int. Cl. B21d *51/26*
U.S. Cl. 113—1 **23 Claims**



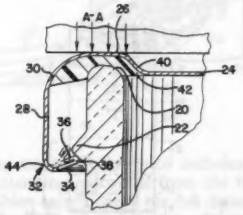
An apparatus for and method of forming a sheetlike workpiece wherein the workpiece is formed utilizing forming dies which have control surfaces which do not engage the workpiece and such control surfaces control the action of the forming dies to assure that a known substantially exact amount of working material remains after forming such workpiece.

3,580,201

CLOSURE

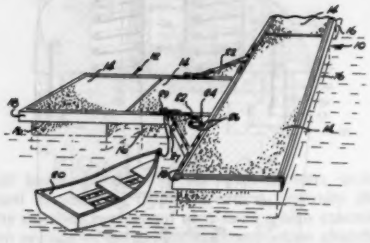
Peter A. Vercillo, Chicago, Ill., assignor to Continental Can Company, New York, N.Y.

Division of Ser. No. 786,219, Dec. 23, 1968, Pat. No. 3,494,497
Filed Aug. 28, 1969, Ser. No. 872,794
Int. Cl. B21d *51/00*
U.S. Cl. 113—121 **3 Claims**



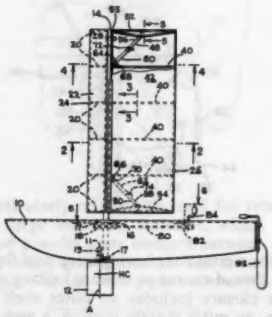
A closure for a container having a top seal finish and a side finish having thread means or closure locking means thereon in which the closure includes an outer shell having a top panel portion, an outer margin portion, a gasket disposed at least partially within said margin portion on an interior surface thereof, and a skirt depending from said outer margin, and including a plurality of fastening elements disposed about the bottom thereof. The fasteners include inwardly extending fingers, spring biased inwardly but resiliently movable outwardly. The resulting closure may be pressed, without intentional rotation, over the finish portion of a container, and will lock in place thereover as the fastening elements deflect outwardly when passing over the threads and thereafter engage the threads to hold the closure in position, while the gasket portion engages at least the top finish of the container in a sealing relation. Subsequent rotation will then unscrew the cap in a conventional manner.

3,580,202
FLOATING WHARF STRUCTURE
Kenneth L. Thompson, Huntington Beach, Calif., assignor to Ye Dock Master, Inc.
Filed Mar. 11, 1969, Ser. No. 806,249
Int. Cl. B63b 35/00
U.S. Cl. 114—0.5 9 Claims



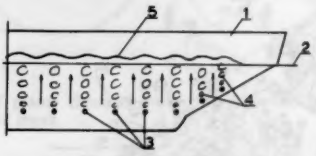
A floating wharf structure wherein interconnected walkways are provided spaced from the top surfaces of supporting pontoons. Each of the walkways comprises a flat sheet of wire mesh screen and spacing means are defined by reinforcing bars disposed downwardly from the sheet. The screen and bars are encased in concrete shaped to define the walkway and integral spacing means. The walkways are interconnected by flanges extending downwardly from the walkways to contralaterally flank underlying pontoons. Each pontoon comprises walls of concrete defining a chamber and polymer foam filling the chamber.

3,580,203
SAILBOAT
Benjamin P. Martin, 1249 Lime Drive, Sunnyvale, Calif.
Filed Nov. 5, 1968, Ser. No. 773,413
Int. Cl. B63b 35/00; B63h 9/06
U.S. Cl. 114—39 15 Claims



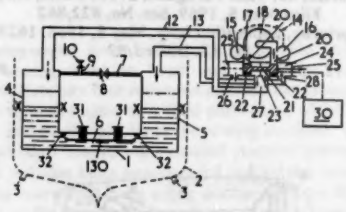
A sailboat including hull having a mast mounted for full 360° rotation thereon and forming the central portion of a sail having the configuration of an air foil and arranged to collapse together with means for adjusting the sail position, the sail being supported so that its aerodynamic center is closely adjacent its axis of rotation and cooperatively arranged with a rotatable centerboard to achieve optimum utilization of the propulsive forces of a wind.

3,580,204
ARRANGEMENT IN SHIPS
Fred Burmeister, Parksvangen; Ernst Enkvist, Grondal; Bengt Johansson, Kadettvagen, and Valter Kostilainen, Niittykumpu, Finland, assignors to Oy Wartsila Ab, Helsinki, Finland
Filed Nov. 12, 1968, Ser. No. 774,654
Claims priority, application Finland, Nov. 11, 1967, 3044/67
Int. Cl. B63b 1/38
U.S. Cl. 114—67 6 Claims



An arrangement in ships, especially in ships moving in ice filled waters, the arrangement comprising underwater/air blowing openings at the side of the ship, preferably in the bow area of the ship. By blowing air through the openings a strong upwards directed water flow is produced which at the water surface bows sidewards. This water flow can be used to facilitate the moving of the ship in ice filled waters and as an auxiliary steering means.

3,580,205
SHIP STABILIZERS
John Bell, deceased, late of Beckenham, Kent, England, Barclays Bank Limited and Bella Bell Executors, Beckenham, Kent, England, assignors to Muirhead Limited, Kent, England
Filed Jan. 31, 1969, Ser. No. 796,649
Claims priority, application Great Britain, Feb. 2, 1968, 5374/68
Int. Cl. B63b 43/06
U.S. Cl. 114—125 6 Claims

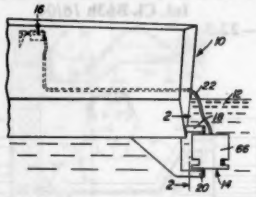


A tank stabilizer for marine use has a high-Q tuned U-tank system in which the water levels in the two side tanks are boosted, when the system is operating at resonance, by a booster arrangement. The booster arrangement is insufficiently powerful to operate the stabilizer as an active stabilizer but improves the Q factor of the tank system to enhance its stabilizing power. The booster arrangement is controlled by roll-sensing means.

3,580,206
AUTOMATIC PILOT
William R. Duncan, Rte 3, Box 249, Sequim, Wash.
Filed Mar. 11, 1969, Ser. No. 806,105
Int. Cl. B63h 25/00
U.S. Cl. 114—144 8 Claims

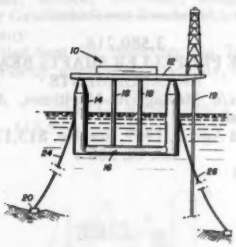
A compass-controlled valve continuously regulates differential, atmospheric venting of opposite lateral sides of a venturi throat in a flow passage extending through a rudder which directionally controls movement of a craft. The dynamic pressure of a flow stream through the rudder passage is thereby controlled to directionally drive a turbine

wheel geared to the pivot shaft of the rudder for corrective angular movement of the rudder, reestablishing the craft



heading corresponding to the adjustable setting of the compass-controlled valve.

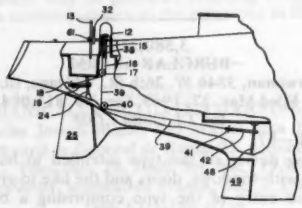
3,580,207
METHOD AND MEANS FOR MOORING
Frans V. A. Pangalila, Matawan Township, assignor to John J. McMullen Associates, Inc., New York, N.Y.
Filed Apr. 4, 1969, Ser. No. 813,598
Int. Cl. B63h *25/00*; B63b *35/44*
U.S. Cl. 114—144 **9 Claims**



A method and means for mooring and particularly adapted for mooring semisubmersible platforms, such as drilling platforms used in the offshore drilling of oil wells. The invention contemplates providing the platform with a series of tensioned mooring lines, sensing means for sensing tension in the various mooring lines, and means for relieving the tensions on selected mooring lines responsive to the tension on a mooring line rising above its initially tensioned condition due to surge motions of the platform resulting from wind and waves

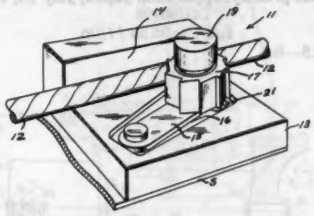
---

3,580,208
RUDDER CONTROL FOR A SAIL BOAT
Henry R. Hinckley, Southwest Harbor, Maine, assignor to Henry R. Hinckley & Company, Southwest Harbor, Maine
Filed June 26, 1969, Ser. No. 836,808
Int. Cl. B63h *25/06*
U.S. Cl. 114—163 **10 Claims**



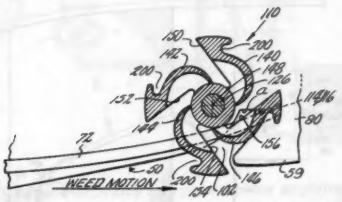
A rudder control for a sail boat which has a main rudder and an auxiliary rudder with means to selectively operate the rudders separately or in unison which includes the use of a locking member.

3,580,209
CONTROLLED RELEASE SAFETY CLEAT
Birger H. Olson, Lansing, Mich.
Filed Sept. 10, 1968, Ser. No. 856,657
Int. Cl. B63b *21/08*
U.S. Cl. 114—218 **7 Claims**



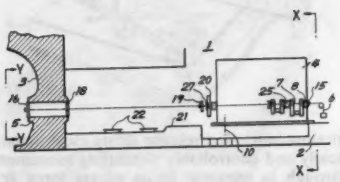
A friction-controlled release safety cleat apparatus for automatically and controllably permitting movement of a sheet therethrough in response to an excess force acting on the sheet. The cleat apparatus consists of a base member having a raised sheet guide wall along one side thereof. A spring biased cam arm is pivotally mounted on the base member and is provided with a freely rotatable ratchet wheel thereon. The ratchet surface of the ratchet wheel is adapted to press against a sheet positioned against the guide wall. A tightening means is provided on the cam arm in association with the ratchet wheel so as to selectively restrict the ratchet wheel against rotation below a predetermined force level. The ratchet wheel and sheet guide wall are adapted to retainably hold a sheet therebetween against movement and to permit a controlled playing out of the sheet only while a predetermined force upon the sheet is being exceeded.

3,580,210
NONCLOGGING MARINE GRILLE WITH UNPOWERED WEED-CUTTING PROVISIONS
Niels Alf Svensen, Avon, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed July 3, 1969, Ser. No. 838,820
Int. Cl. B63h *5/16*
U.S. Cl. 115—0.5 **26 Claims**



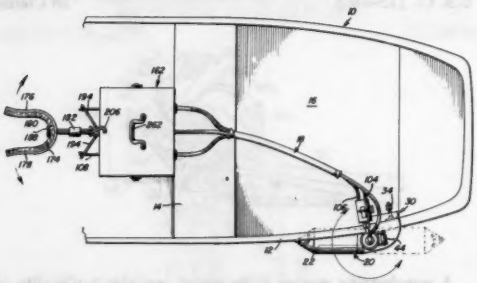
A nonclogging marine grille which includes a plurality of rod members extending rearwards from the forward end in cantilevered fashion substantially the full distance across the water inlet opening in the direction of vessel travel and spaced to prevent the passage therebetween of harmful debris and shaped to cause debris to move therealong due to hydrodynamic forces acting thereagainst due to vessel motion. The rod members terminate short of the after end of the inlet and at a selected distance therefrom so that objectionable debris cannot pass through the gap between the rod member ends and the inlet surface but so that weeds which have draped across the rod members and passed aft free of the rod members may be ingested into the inlet or passed free thereof. The grille also includes a central stiffener member similarly shaped but extending across the full inlet opening length and projecting from the hull and outwardly of said rod members to prevent damage to the inlet grille during beaching and shallow water operations, and including weed cutters propelled by weed movement and hydrodynamic forces coacting therewith to cut any weeds which drape therearound and are passed to the after end thereof and which would otherwise clog the inlet.

3,580,211
METHOD OF SHAFT ALIGNMENT OF A MAIN ENGINE SHAFT IN SHIPBUILDING
Hajime Kurashiki, Tokyo, and Yoshiharu Ikuta, Ichihara, Chiba, Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan
Filed July 16, 1969, Ser. No. 842,250
Claims priority, application Japan, July 18, 1968, 43/50996
Int. Cl. B63b *11/06*
U.S. Cl. 115—0.5 1 Claim



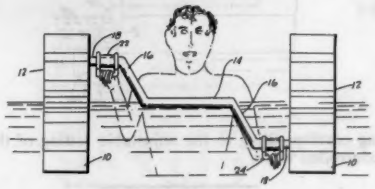
A method of aligning the shaft of a main engine with the centerline of the propeller shaft in which the main bearing pins of the crankshaft are made hollow to permit sighting through the crankshaft and the bearings for alignment of all of the elements. The elements are aligned approximately by threading a piano wire through the elements and are more precisely adjusted by visual alignment after removal of the wire.

3,580,212
CONTROL AND MOUNTING SYSTEM FOR ELECTRIC TROLLING MOTOR
Warren D. Fortson, P.O. Box 97, Sturgis, Miss.
Continuation-in-part of application Ser. No. 771,766, Oct. 30, 1968. This application Dec. 4, 1969, Ser. No. 882,189
Int. Cl. B63h *21/26*
U.S. Cl. 115—18 13 Claims



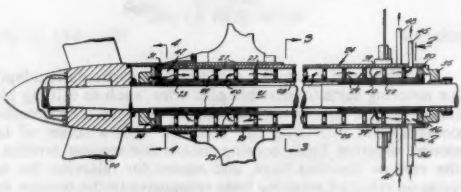
An electric outboard motor assembly and storage housing therefor including remotely disposed power and steering controls. The storage housing is constructed in a manner whereby a battery for the electric outboard motor assembly may be received therein and a voltage control is mounted on the housing and operatively connected to the battery and electric motor of the outboard motor assembly for controlling the speed of operation of the electric motor. Further, the steering control for the electric outboard motor assembly includes a pair of selectively usable steering components, one of which is removably supported from the housing and receivable in the latter for storing and the other of which is mountable directly on the outboard motor assembly and is also receivable in the housing for storage. In addition, the second mentioned steering control is provided with its own voltage control whereby one hand operation of the electric outboard motor assembly may be accomplished when the motor is being steered by the second mentioned steering control.

3,580,213
SWIMMING PADDLES
Melville J. G. Yuen, 1707 Wilhemlmina Rise, Honolulu, Hawaii
Filed Oct. 6, 1969, Ser. No. 863,931
Int. Cl. B63h *16/04*
U.S. Cl. 115—22.3 4 Claims



A shaft has oppositely extending offset portions at opposite ends, each portion being connected to a corresponding flotation paddle. Straps secure the shaft rotatably to a user in water. The user, using hands or feet, rotates the shaft to move the paddles and propel himself in the water. The paddles are lighter than water and act as floats as well as assisting in propulsion.

3,580,214
MARINE PROPELLER SHAFTS BEARING ARRANGEMENTS
Ernest Muller, c/o Messageries-Maritimes, AMP Building, Sydney, Australia
Filed Apr. 3, 1969, Ser. No. 813,115
Int. Cl. 308 *4*
U.S. Cl. 115—34 13 Claims

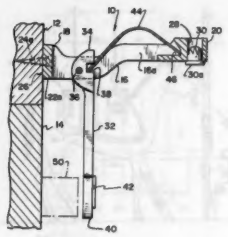


Marine propeller shaft bearing assemblies feature a double-walled stern tube which is extremely rigid in construction so as to be capable of resisting primary bending stresses before they can affect the shafting proper. The rigid stern tube permits extension for a considerable distance aft of the stern post of the vessel, thus enabling the positioning of propellers a more favorable distance from the hull to reduce vibration. The annular passage between the walls of the stern tube is utilized for the flow of cooling and lubricating fluids. The structure is applicable to single propeller shafts and counter-rotating propeller shafts.

3,580,215
BURGLAR ALARM
Paul G. Karasman, 3846 W. 26th St., Chicago, Ill.
Filed Mar. 27, 1969, Ser. No. 811,084
Int. Cl. G08b *13/08*
U.S. Cl. 116—87 3 Claims

A warning device of the type intended to be utilized in connection with windows, doors and the like to give notice of unauthorized entry of the type comprising a body having means for securement to a frame adjacent the door or window and an arm hinged to the body and intended to overlie the door or the window with spring means interconnecting the arm and the body so that slight displacement of the arm causes rapid return movement thereof to the body. One of the arm or body has a striker element and the other of the

arm and body has means for receiving an audible signal means, such as a blank ammunition cartridge or the like so



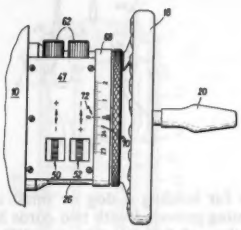
that the rapid return movement will cause the striker element to engage the cartridge thereby causing the cartridge to fire.

3,580,216

APPARATUS IN A MACHINE TOOL FOR INDICATING DISPLACEMENT EFFECTED BY A FEED SPINDLE

Lorenz Weber, Sussen, Germany, assignor to Gebruder Boehringer Gesellschaft mit Beschrankter Haftung, Goppingen, Germany

Filed Sept. 24, 1968, Ser. No. 761,978
Claims priority, application Germany, Sept. 25, 1967, B94645
Int. Cl. B23g *17/00*
U.S. Cl. 116—115.5 **3 Claims**



The novel apparatus in a machine tool for indicating displacement effected by a feed spindle includes at least one counter counting the number of revolutions of a rotary actuator which is driven by the feed spindle through the intermediary of motion-transmitting means including a slip clutch or the like. The actuator is connected with a manually rotatable element such as a knob and, therefore, may be manually rotated independently of the feed spindle. If desired, two such counters may be provided counting in opposite sense, one in the additive sense and the other one in the subtractive sense.

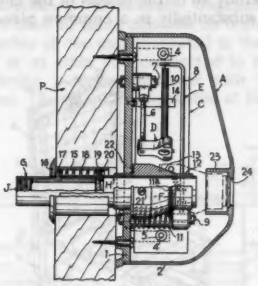
3,580,217

MECHANICALLY ACTUATED WARNING DEVICE

Jean Charles Joseph Blosse, and Michel Jean Joseph Blosse, 48 Boulevard de General de Gaulle 95, Sannois, France

Filed Nov. 29, 1968, Ser. No. 779,955
Claims priority, application France, Dec. 7, 1967, 131,294
Int. Cl. G10k *1/10*
U.S. Cl. 116—169 **12 Claims**

Mechanically actuated warning device of the doorbell type. A hammer is caused to strike sound plates by means of a push piece having a cam portion which acts on an actuating element which is drivingly connected to the hammer through elastically yieldable means forming an overcenter mechanism with the actuating element. Return means urge the actuating



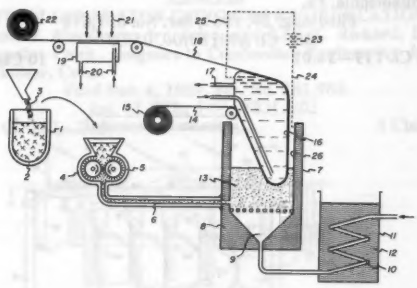
element to a position of rest in which the hammer is in the vicinity of one of the sound plates.

3,580,218

APPARATUS FOR APPLYING A COATING OF ADHESIVE MATERIAL ON TO A SUPPORT

Friedrich Grundschober, Confignon, Geneva, and Joerg Sambeth, Carouge, Geneva, both of, Switzerland, assignors to Aktiebolaget Stadex, Malmo, Sweden

Filed Feb. 8, 1968, Ser. No. 704,138
Claims priority, application Switzerland, Feb. 2, 1967, 2039/67
Int. Cl. B44d *1/094, 1/44*
U.S. Cl. 118—621 **6 Claims**



The invention provides an apparatus for applying a coating of adhesive material on to a support, e.g. a strip of paper. To apply this coating, one surface of the strip is fed over a guide surface through a fluidized bed of the adhesive material in cooled comminuted form, the bed particles which come into contact with said surface being caused to become fixed thereto.

3,580,219

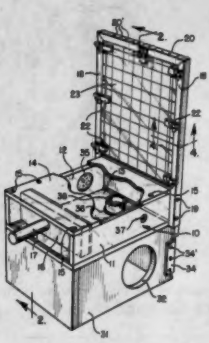
INSECT INSPECTION CAGE

Robert C. Stebbins, 601 Plateau Drive, Kensington, Calif.

Filed Aug. 18, 1969, Ser. No. 850,863
Int. Cl. A01k *67/00*
U.S. Cl. 119—1 **4 Claims**

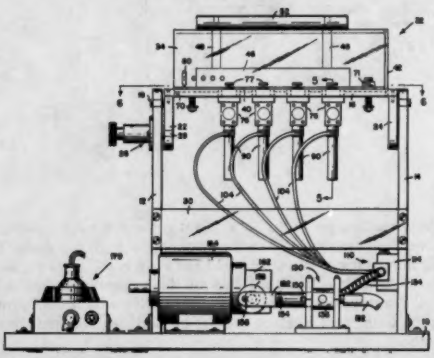
A new and useful enclosure or cage for insects, such as fruit flies (Drosophila), which is especially constructed and adapted to accommodate a colony of such insects, and to provide for such colony, an environment in which the insects may reside and multiply, and in which the insects may be subjected to experimental controls in various manners as may be desired. The enclosure or cage has at least one transparent wall, whereby the insects may be viewed, studied, counted, photographed, and otherwise observed and recorded.

The enclosure or cage has a portion into which the insects may be herded, by movement of a pistonlike wall or walls, and which has a dimension in one direction which provides accommodation for only one layer of insects in that direction, whereby all of the insects in the enclosure or cage are disposed substantially in a common plane and are thus



located immediately adjacent to a transparent wall, and, more specifically, between such wall and a source of light, which may be daylight or photoflash, in such manner as to permit photographic images or shadowgraphs of the mass of insects, so disposed, to be readily made for subsequent examination and counting.

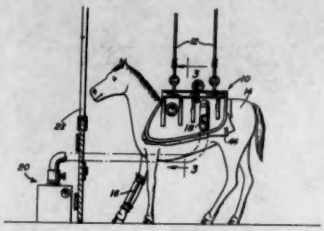
3,580,220
SMALL ANIMAL-MILKING APPARATUS
Allen D. Cook, Philadelphia, and Kalman T. Szabo, Ambler, Pa., assignors to Smith, Kline & French Laboratories, Philadelphia, Pa.
Filed Aug. 20, 1969, Ser. No. 851,678
Int. Cl. A01j *03/00, 05/00*
U.S. Cl. 119—14.01 **10 Claims**



A milking machine for rats or the like having a cage for holding the rat in a suckling position with its teats exposed and means for applying a suction to a plurality of cups which are adapted to receive teats or nipples of the rat. A valve means controls the application of suction to any desired number of cups and the suction is controlled to be provided intermittently by means of a pulsator.

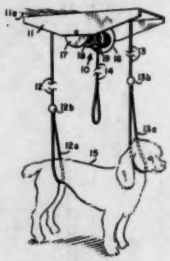
3,580,221
VACUUM SUPPORT FOR ANIMALS
Theodore A. Noyes, 320 Dunn St., Bryan, Tex.
Filed Oct. 31, 1969, Ser. No. 872,980
Int. Cl. A01k *29/00, 67/00*
U.S. Cl. 119—96 **8 Claims**

A vacuum supporter, including a rigid shell, shaped in the contour of an animal's back. A screen is attached in spaced underlying relation to the shell, the screen being adapted to contact the animal's back. A seal is positioned around the outer edge of the shell so that upon introduction of vacuum



pressure in the space between the shell and screen, sufficient suction force can be maintained. The vacuum maintains contact between the animal and the supporter when hoists lift the supporter and animal.

3,580,222
APPARATUS FOR HOLDING PETS
Jane M. Dunn, 2113 N. Pacific Ave., Santa Cruz, Calif.
Filed July 14, 1969, Ser. No. 841,410
Int. Cl. A61d *03/00*
U.S. Cl. 119—102 **6 Claims**

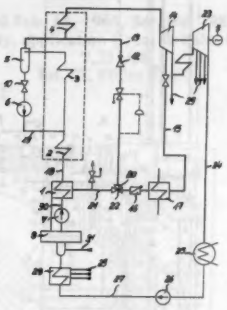


Apparatus for holding a dog or small animal in position during grooming provided with two cords having loops at the lower ends thereof for attaching to different parts of the animal. The upper parts of these cords are attached to spring-loaded reels which are supported on a shaft in a frame which is adapted to be attached to the ceiling of the dog grooming parlor. The reels are provided with members cooperating with a latch which is adapted to lock the reels in predetermined position after the looped parts of the cords are placed on the animal to hold it in grooming position. The latch is controlled by a manually operable cord attached thereto. A hook member is provided to the latch and this is adapted to be received by a locking device when the hook member is inserted therein by exerting pulling effort on the cord. Exerting further pulling effort on the cord serves to release the hook member from the locking device, thereby disengaging the latch and permitting rotation of the reels.

3,580,223
METHOD AND APPARATUS FOR OPERATION OF A POSITIVELY DRIVEN STEAM GENERATOR WITH ROLLED OVERLAP AND GASTIGHT WELDED VAPORIZER WALLS
Klaus Knizia, Nochen Uber, Englskirchen, Germany, assignor to L. & C. Steinmuller G.m.b.H., Gummersbach, Germany
Filed Apr. 24, 1969, Ser. No. 819,013
Int. Cl. F22b *29/06*
U.S. Cl. 122—1 **2 Claims**

A method of and arrangement for operating a steam generator with forced circulation and with circulation overlap and gastight welded evaporator walls, in which saturated steam freed in a separator vessel is conveyed not only to suc-

ceeding superheaters, but also through a withdrawal conduit and a control valve to a heat exchanger preceding the steam generator or its evaporator, and in which the said saturated



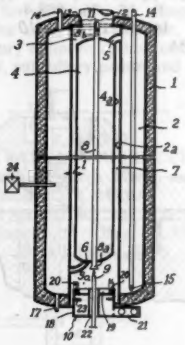
steam is employed for heating up the feed water to a temperature which is as close as possible to the pertaining saturation temperature.

3,580,224

GAS-OPERATED WATER HEATER

James Rouet, Bois-Colombes, and Roger Vignes, Paris, France, assignors to Service National dit. Gas De France, Paris, France

Filed Aug. 6, 1969, Ser. No. 856,232
Claims priority, application France, Aug. 9, 1968, Dec. 5, 1968, 162,566;176,864
Int. Cl. F22b *7/04*
U.S. Cl. 122—16 **20 Claims**



A gas-operated water heater has a peripheral water tank surrounded by a thermally insulated jacket. A cavity within the peripheral tank contains a central water tank and an annular flue is defined between the two tanks. A burner and a pilot light are situated beneath the tanks the fumes from the burner passing through the annular flue and the fumes from the pilot light passing through a flue in the central tank. The tanks are in fluid connection and cold water may be fed to them and hot water drawn off.

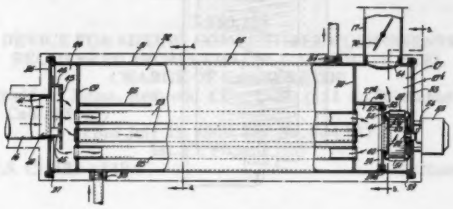
3,580,225

ECONOMIZER

John W. Coy, Exton, Pa., assignor to Coy Oil Co., Inc., Exton, Pa.

Continuation-in-part of application Ser. No. 798,406, Feb. 11, 1969, now abandoned. This application Nov. 24, 1969, Ser. No. 879,355
Int. Cl. F22b *33/00;* **F28f** *9/02*
U.S. Cl. 122—20 **13 Claims**

A heating system having a furnace with a flue and a chimney in communication with the flue for venting combustion gases to the atmosphere is provided with an economizer heat exchanger intermediate the flue and the chimney for extracting an additional quantity of heat from the combustion gases to improve the efficiency of the heating system. The economizer comprises a horizontally disposed cylindrical shell mounting a bank of tubes adjacent its bottom and having an inlet chamber at one end connected to the flue and an outlet chamber at its other end connected to the chimney, the chambers being in communication with one another through the tubes. The tubes are supported at their ends and



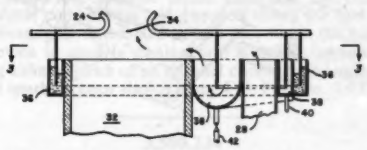
they are spaced apart by means of walls extending across the shell, the walls forming therebetween a cavity through which fluid is flowed upwardly across the tubes for extracting heat therefrom as the combustion gases flow through the tubes. A fan is mounted in the outlet chamber for inducing the gases to flow through the tubes and out the chimney, the fan having a greater capacity for removing the gases than the furnace has for producing them. In addition, means is provided to regulate the pressure in the combustion chamber of the furnace, the pressure being reduced below atmospheric due to the operation of the fan.

3,580,226

STEAM GENERATOR USING GAS RECIRCULATION

Samuel S. Blackburn, Jr., Avon, and Earl K. Rickard, East Granby, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 4, 1969, Ser. No. 881,986
Int. Cl. F22g *5/06;* **F23j** *5/02*
U.S. Cl. 122—235 **4 Claims**



A steam-generating unit using gas recirculation for steam temperature control, where the recirculated gases are introduced into the furnace through the ash hopper. A liquid seal inside the ash hopper is used to control flow of recirculated gases.

3,580,227

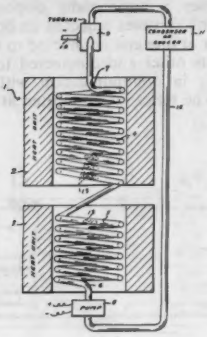
BOILER INLET PLUG INSERT WITH HEAT DAMS

Alfred Koestel, Nogales, Ariz. assignor to The United States of America as represented by the Secretary of the Air Force

Filed Feb. 5, 1970, Ser. No. 8,797
Int. Cl. F22b *37/34*
U.S. Cl. 122—406R **5 Claims**

A device for eliminating the thermal instability of a liquid in forced feed convection boilers in which subcooled liquids which are introduced at the inlet have a tendency to superheat and flash into vapor to produce liquid slugs which are discharged at the outlet with the dry or superheated vapor. The invention is a rod-or sleeve-type insert located in the heating coils which produces liquid flow damping and controls the liquid superheating, and incorporates a nucleation device or devices disposed axially along the direction of

liquid flow and introduces heat dams at the nucleation sites created by vapor from the heated site to prevent the liquid being heated from entering the nucleation site and flashing into vapor.

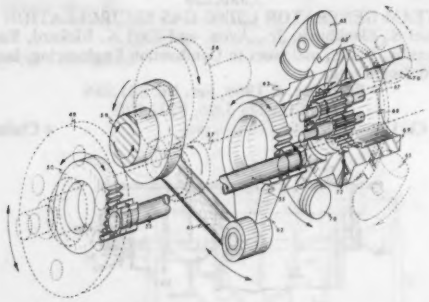


3,580,228

OSCILLATING INTERNAL COMBUSTION ENGINE

Octavio Rocha, Ave Tecnologics Sur #600, and Serafin Cano, Via Asinaria #315 Col. Fuentes del Valle, Monterrey, Mexico

Filed May 20, 1969, Ser. No. 826,151
Int. Cl. F02b *53/00*
U.S. Cl. 123—18 **9 Claims**



The invention hereinafter disclosed is a power unit which includes an internal or external combustion engine having an annular cylinder, arcuate pistons which oscillate in that cylinder and improved mechanism for translating the power developed in the engine to a shaft to be driven. The engine may be supplied with fuel either by injection or carburetion or by steam or fluid or gas under pressure and the arrangement is such that vibrations due to explosions of the fuel mixture or of power strokes are minimized and the output shaft is powerfully driven at uniform speed.

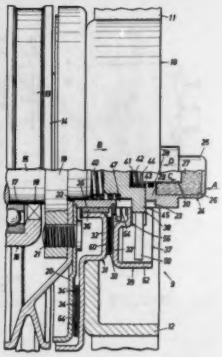
3,580,229

METHOD AND MEANS FOR SWITCHING ON AND OFF THE FAN WHEEL OF A REGULATING FAN

Michael May, Stuttgart-Berg, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed Feb. 25, 1969, Ser. No. 802,093
Claims priority, application Germany, Mar. 1, 1968, P 16 26 008.5
Int. Cl. F01p *7/02*; **F16d** *7/00, 19/00*
U.S. Cl. 123—41.12 **8 Claims**

The cooling fan of an internal combustion engine is driven through a temperature-controlled clutch. Slipping of the clutch is held to a minimum by an auxiliary actuating mechanism which automatically moves the clutch into the fully engaged or the fully disengaged position as soon as it has been moved by a thermostat into an intermediate position. Several examples of clutch arrangements are given.

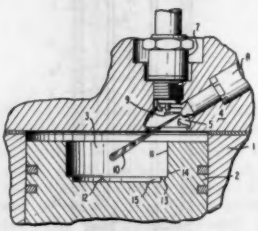


3,580,230

AIR-COMPRESSING INJECTION-TYPE INTERNAL COMBUSTION ENGINE WITH EXTERNALLY CONTROLLED IGNITION AND QUALITY REGULATION

Heinrich Hoffmann, Stuttgart-Geroksruhe, and Wilhelm Wagner, Stuttgart-O, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Oct. 3, 1968, Ser. No. 764,734
Claims priority, application Germany, Oct. 5, 1967, P 15 76 008.4
Int. Cl. F02b *19/10*
U.S. Cl. 123—32SPA **23 Claims**



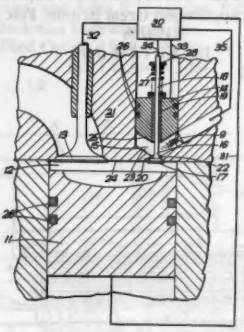
An air-compressing internal combustion engine with externally controlled ignition and quality regulation which includes an at least approximately axially symmetrical combustion space arranged in the piston, in which an air rotary movement about the combustion space axis is present toward the end of the compression stroke, and which includes an injection system which injects fuel against the wall of the combustion space approximately in the direction of the air movement and approximately tangentially with a nonnegligible free length of the jet so that the fuel thus injected into the piston combustion space flows along the walls thereof; an auxiliary combustion space is arranged in the cylinder head which includes an injection nozzle and an ignition source whereby the auxiliary combustion space has the shape of an approximately semispherically shaped recess containing about 5 to 20 percent of the entire combustion space volume; the auxiliary combustion space is arranged within the area of a circumferential place of the piston combustion space while the injection nozzle is so arranged and constructed in the auxiliary combustion space that in addition to the partial fuel quantity injected into the piston combustion space a further partial fuel quantity is injected obliquely against the wall parts of the auxiliary combustion space.

3,580,231

VALVE MECHANISMS FOR USE WITH INTERNAL COMBUSTION ENGINES

Cyril Henry Bradbury, London, England, assignor to Simms Group Research and Development Limited, London, England

Filed Feb. 11, 1969, Ser. No. 798,378
Claims priority, application Great Britain, Feb. 14, 1968, 7,251/68
Int. Cl. F02m 67/00
U.S. Cl. 123—32 10 Claims



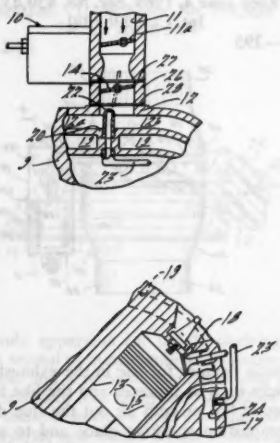
An internal combustion engine has a main cylinder and piston for receiving part of the main charge of combustible mixture for operating the engine, a subsidiary cylinder interconnected with the main cylinder by a passage, a valve controlling the passage so that part of the charge in the main cylinder passes into the subsidiary cylinder during the compression stroke of the main piston, a subsidiary piston in the subsidiary cylinder for increasing the compression of the part of the charge in the subsidiary cylinder, an additional fuel inlet to the subsidiary cylinder and a control mechanism for operating the valve, subsidiary piston and fuel inlet in timed relation.

3,580,232

ENGINE EXHAUST RECIRCULATION

Jorma O. Sarto, Orchard Lake, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Division of Ser. No. 807,706, Mar. 17, 1969
Filed June 18, 1970, Ser. No. 47,488
Int. Cl. F02n 25/06
U.S. Cl. 123—119 7 Claims



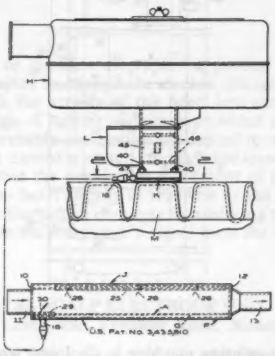
Controlled recycling of automobile exhaust gases through a bypass conduit connecting the exhaust system and the fuel and air inlet system is accomplished during various engine-operating conditions by means of a venturi in the exhaust system at its connection with the bypass conduit, and also by means of a pitot-type opening of the bypass conduit into the inlet system, the dimensions and arrangement of the venturi and pitot opening being determined to effect a reverse flow of either fresh air or a fuel-air mixture into the exhaust system (depending on the location of the pitot opening upstream of downstream of the fuel supply into the inlet system) thereby to enhance complete combustion of the exhaust gases within an exhaust reactor in the exhaust system.

3,580,233

DEVICE FOR MIXING COMBUSTIBLE COMPONENTS RECOVERED FROM EXHAUST GASES WITH FUEL CHARGE OF CARBURETOR

Ewald A. Busse, Redwood City, Calif. (151 E. St. Auburn, Calif. 95603)

Filed July 25, 1969, Ser. No. 844,977
Int. Cl. F02m 25/06
U.S. Cl. 123—119A 3 Claims



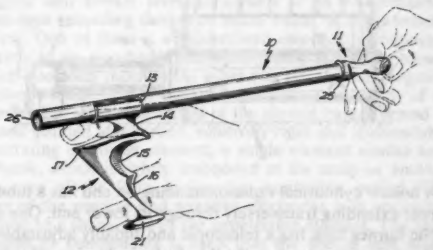
A device for mixing combustible components recovered from the exhaust gases of an internal combustion engine with the fuel charge of a carburetor, the device being connected to the carburetor and the intake manifold, the recovered combustible components and disposed above the fuel charge being thoroughly intermixed before they reach the manifold. This device is used in conjunction with the apparatus for utilizing exhaust gases of an internal combustion engine, muffler and spark arrestor shown in my U.S. Pat. No. 3,435,810.

3,580,234

TOY GUN WITH STRETCHABLE DIAPHRAGM

Reynolds W. Guyer, Jr., Mendota Heights, and Wilbert A. Kruse, St. Louis Park, Minn., assignors to said Krause assignor to said Guyer d/b/a Winsor Concepts, Minneapolis, Minn.

Filed Nov. 29, 1968, Ser. No. 779,946
Int. Cl. F41b 7/08
U.S. Cl. 124—21 7 Claims



A toy gun having an elongated tube with a balloon secured over the rear end of the tube and a handle secured adjacent

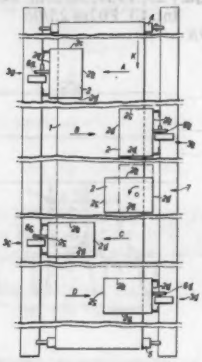
the front end of the tube so that when the handle is held in one hand the balloon may be grasped by the other hand to be stretched and then released to propel a projectile deposited in a balloon. The handle has finger grooves therein to minimize the gripping force necessary to hold the handle.

3,580,235

MANUFACTURE OF SLATES

Lazlo Lombos, Llandudno Junction, and Michael Robert Hughes, Old Colwyn, North Wales, assignors to The Dinorwic Slate Quarries Company, Limited, Port Dinorwic, Caernarvonshire, Wales

Filed July 22, 1968, Ser. No. 746,579
Claims priority, application Great Britain, Aug. 1, 1967, 35,259/67
Int. Cl. B28d *1/18, 1/32*
U.S. Cl. 125—3 **7 Claims**



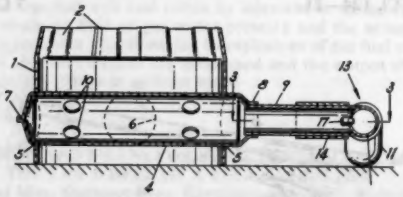
A slate-chamfering machine is disclosed which comprises at least one rotatably drivable cutting tool, the machine being adapted to present at least one edge of a substantially rectangular slate to the cutting tool, and feeding means for effecting relative movement between the cutting tool and the slate in a direction substantially parallel to the axis of rotation of the tool when the slate is presented to the tool, whereby the whole length of said edge may be roughly chamfered to achieve a "naturally broken" finish.

3,580,236

HEAT RADIATOR AND BURNER WITH ADJUSTABLE CONNECTION TO GAS SUPPLY LINE

Calvin C. Plummer, Box 333, Hastings, Mich.

Filed Oct. 10, 1969, Ser. No. 865,361
Int. Cl. A01g *13/06*
U.S. Cl. 126—59.5 **5 Claims**



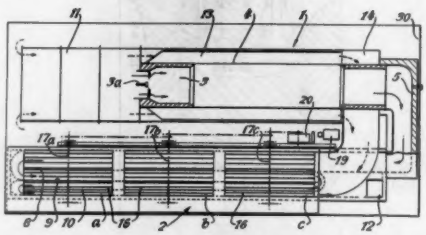
A hollow cylindrical radiator standing on end has a tubular burner extending transversely through its lower end. One end of the burner tube has a telescopic and slidably adjustable fit with a tee connector in a flexible fuel supply pipe. The stem of the tee is split to yieldably grip the end of the burner tube, and opens around the exterior of the crossmember of the tee. The end of the burner tube adjusts axially toward closing engagement with the exterior of the crossmember to adjust the air opening into the base of the tee and the end of the burner tube.

3,580,237

AIR HEATER

Alan Barsby, Lea Meadows, Gainsborough, England, assignor to Marshall Sons & Company Limited, Gainsborough, Lincolnshire, England

Filed Feb. 4, 1969, Ser. No. 796,532
Claims priority, application Great Britain, Feb. 8, 1968, 6194/68
Int. Cl. F24h *3/12*
U.S. Cl. 126—110 **9 Claims**



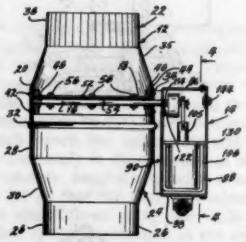
This invention relates to an air heater comprising a combustion chamber, means to supply air and a combustible fuel to the combustion chamber, an exhaust for the products of combustion from the combustion chamber, a first duct connecting the combustion chamber to the exhaust, an inlet and an outlet for air to be heated, a second duct interconnecting the inlet and outlet, said second duct surrounding the combustion chamber for part of its length and for a different part of its length being parallel to, and sharing a common boundary with, said first duct, to define a thermal regenerator, the thermal regenerator comprising a plurality of heat transfer discs extending through said common boundary into both ducts, and means to rotate each disc about its axis of symmetry.

3,580,238

AUTOMATIC DAMPER MEANS

Charles G. Diehl, North Little Rock, Ark., assignor to Save Fuel Corporation, Tunica, Miss.

Filed June 4, 1969, Ser. No. 830,431
Int. Cl. F23l *3/00*
U.S. Cl. 126—295 **8 Claims**



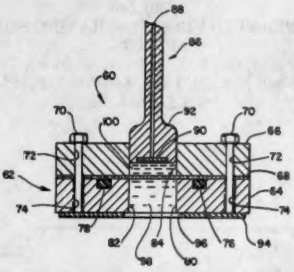
An automatic damper for use in the exhaust flue of combustion devices such as furnaces and the like to prevent undesirable loss of hot or cold air out the flue during periods when no combustion is taking place and to assure that no combustion can take place unless and until the flue is open or unrestricted. The damper has a rotatable damper plate normally biased to a closed position for preventing flow com-

munication through the flue, motor means which when energized move the damper plate to an alternate open position to allow substantially unrestricted communication through the flue, and switch means connected in a circuit with the means that supply fuel to the combustion means, said switch means being closed when the damper plate moves to its open position to enable a combustion cycle to take place.

3,580,239
METHOD AND APPARATUS FOR IN VIVO POTENTIOMETERIC MEASUREMENTS

Hideo Watanabe, and John E. Leonard, Fullerton, Calif., assignors to Beckman Instruments, Inc.

Filed Oct. 3, 1969, Ser. No. 871,077
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.1R **4 Claims**

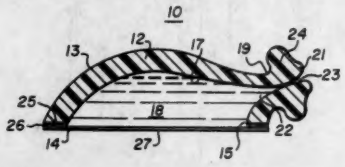


A biomedical electrode assembly for detecting electrical signals from a living subject. The electrolyte reservoir of the assembly is divided into two separate sections by a dialysis membrane. The section which is in contact with the skin of the living subject contains an electrolyte which will not irritate the skin while the other section of the electrolyte reservoir contains an electrode component and an electrolyte which cooperates with the component to produce a constant, known reference voltage. The first mentioned electrolyte is preferably isotonic saline solution and the second electrolyte is at least 3 molar potassium chloride solution.

3,580,240
DISPOSABLE ELECTRODE WITH SELF-SEALING PLUG OUTLET

Louis Ciro Cosentino, West Paterson, N.J., assignor to Hoffman-La Roche Inc., Nutley, N.J.

Filed Jan. 17, 1969, Ser. No. 792,038
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 **5 Claims**

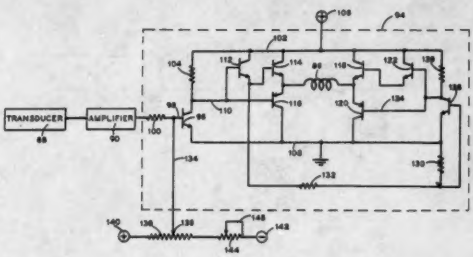


In an electrode apparatus for use in deriving electrical signals from an animal or human subject including a disposable interface unit and a reusable electrode plug unit where the disposable interface unit comprises: a unitary fabricated nonconductive member having a reservoir adapted to contain a viscous electrolyte, and outlet means extending from the reservoir to an upper surface of the member including a self-sealing closure means adapted to detachably receive the electrode plug when inserted therein.

3,580,241
CARDIOGRAPHIC APPARATUS WITH STYLUS CONTROL MEANS

Berel Weinstein, New York, N.Y., assignor to Bio-Medical Sciences, Inc., New York, N.Y.

Filed Aug. 8, 1968, Ser. No. 751,078
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 **7 Claims**

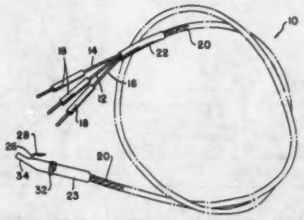


An electro- or phonocardiographic apparatus including a transducer adapted to convert the electric changes or sounds associated with the activity of the heart into corresponding graphic readings. A writing surface is provided and a stylus driven by a reversible servomotor is adapted to write on the surface. A first transistor switch connects the transducer with the motor so that the position or movement of the stylus is indicative of the heart activity as received by the transducer. A second transistor switch connects for restoring the stylus to a null position in the absence of a signal from the transducer.

3,580,242
FETAL SCALP ELECTRODE UNIT

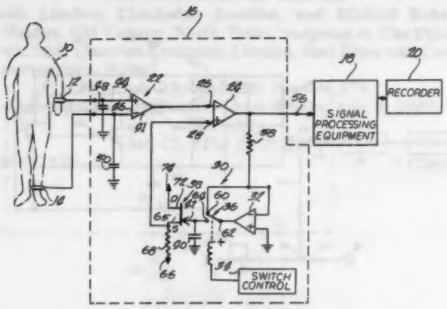
George E. La Croix, 695 Vaughan Road, Bloomfield Hills, Mich.

Filed Apr. 1, 1968, Ser. No. 717,529
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 **3 Claims**



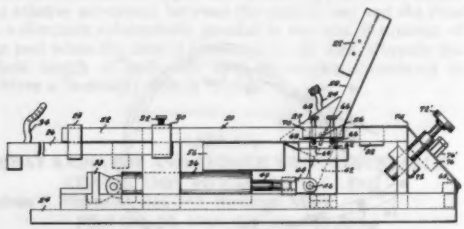
An electrode or lead unit for monitoring fetal heartbeat is disclosed which includes, in the illustrated embodiment, three electrical leads having jack connector ends to be plugged into female terminal sockets of an electrocardiogram-type recording device or audio visual or other sensing device. One of these is a ground lead electrically connected directly to an elongated, sleevelike plastic grounding sheath which internally receives the other two positive and negative electrode leads. One of the latter terminates externally of an inner end of a terminal shield of the sheath, being formed as a small pointed and barbed, relatively rigid and nonbendable penetrating electrode element, a single element similar to a fishhook, which is lightly embedded in the scalp or another skin area of the fetus during the monitoring period. The other of the positive and negative electrodes is in encircling relation to a shank part of the penetrating element. The relationship of components is such that the sheath unit make continuous grounding contact with the vaginal mucosa, so as to afford a clear tracing on the recording device throughout the period of use.

3,580,243
MEANS AND METHOD FOR SUBTRACTING DC NOISE FROM ELECTROCARDIOGRAPHIC SIGNALS
Gilbert A. Johnson, Milwaukee, Wis., assignor to Marquette Electronics, Inc., Milwaukee, Wis.
Filed Oct. 21, 1968, Ser. No. 769,314
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06B **6 Claims**



The electrocardiographic signal and a DC noise level are applied to a first of two input terminals to a differential amplifier and the output of the differential amplifier supplies the electrocardiographic signal to an output terminal without the DC noise level. To offset the DC noise level, a feedback loop from the output terminal to the second input terminal of the differential amplifier includes a sample and hold circuit that first applies the output from the differential amplifier through a nulling amplifier to a capacitor and then applies the potential on the capacitor to the second input terminal of the differential amplifier.

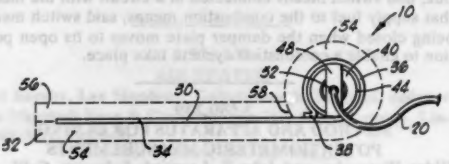
3,580,244
THERAPEUTIC DEVICE OSCILLATING DEVICE
Mary E. Graves, 4101 Providence Rd., Charlotte, N.C.
Filed Mar. 20, 1969, Ser. No. 808,828
Int. Cl. A61h *1/02*
U.S. Cl. 128—25A **5 Claims**



A therapeutic device used to relieve and prevent heel cord contractures, including a foot-supporting plate member pivotally mounted about a laterally extending axis located substantially beneath the ankle joint of the supported foot, and including a reciprocating hydraulic motor connected to the plate member to cause oscillation thereof. They hydraulic circuit for operating the motor includes a shiftable reversing valve that is selectively operable to control the angular extent of the plate member oscillations, and includes selectively adjustable flow control valves for regulating the speed of oscillation of the plate member. Additionally, the hydraulic circuit may include a selectively adjustable pressure relief valve for controlling the force applied to the supported foot by the plate member.

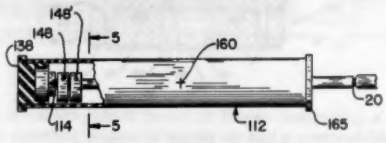
3,580,245
VIBRATORY MASSAGING DEVICE
Onnie R. Dill, 10301 Hasley Place, Oklahoma City, Okla.
Filed Feb. 3, 1969, Ser. No. 796,077
Int. Cl. A61h *1/00*
U.S. Cl. 128—33 **8 Claims**

Massaging apparatus which is capable of more effectively distributed vibratory motion, the apparatus consisting of a frame constructed of expanded metal and having a vibratory element securely affixed thereto, with a resilient padding



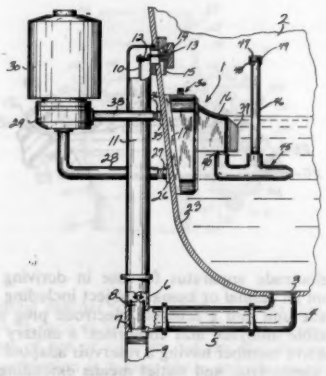
overlaying the frame structure and with a decorative outer cover removably disposed thereover.

3,580,246
MOTOR OPERATED VIBRATOR HAVING SOLAR TYPE MOTION
Dave O. Foreman, 606 E. Broadway, Andrews, Tex.
Filed Nov. 22, 1968, Ser. No. 778,255
Int. Cl. A61h *1/00*
U.S. Cl. 128—36 **3 Claims**



Motor driven apparatus, for inducing vibratory action into a person's body, comprised of a housing having a shaft rotatably journaled therein by spaced apart bearing means. Spaced apart eccentric weights placed near each bearing means and rigidly affixed to the shaft induces a circular vibratory motion in the extremities of the housing while the center of the housing remains relatively quiescent. A motor located apart from the housing rotatably drives the shaft by means of a flexible coupling member.

3,580,247
HYDROTHERAPEUTIC DEVICE
Richard C. Schneider, 701 N.E. 23rd Terrace, Pompano Beach, Fla.
Filed Sept. 12, 1968, Ser. No. 759,433
Int. Cl. A61h *9/00, 33/02*
U.S. Cl. 128—66 **9 Claims**

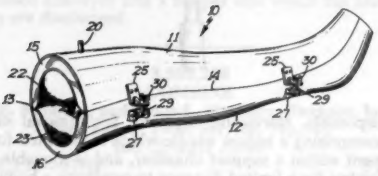


A hydrotherapeutic unit to be permanently installed with a bathtub or tank. The unit includes a manifold mounted on

the end wall of the tub and the manifold defines a water supply chamber and a return chamber. A pair of conduits extend through the end wall of the tub on opposite sides of the waste valve operating mechanism and one conduit establishes communication between the supply chamber and the discharge side of a pump located outside of the tub, while the second conduit establishes communication between the return chamber and the suction side of the pump.

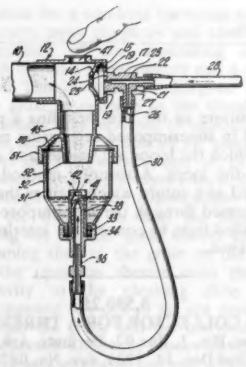
A nozzle assembly is located within the tub and is connected to the supply chamber so that water discharged by the pump is delivered to the supply chamber and then ejected under high pressure from the nozzle assembly within the body of water in the tub. The water is recirculated from the tub through the return chamber to the pump.

3,580,248
BI-VALVED CAST
Leighton W. Larson, P. O. Box 202, Waconia, Minn.
Filed Dec. 2, 1968, Ser. No. 780,335
Int. Cl. A61f *5/04*
U.S. Cl. 128—89 **8 Claims**



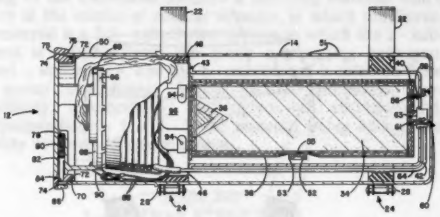
A cast for immobilizing broken limbs which includes a pair of bivalved shells, an inflatable liner in each of the shells, an absorbent liner or padding, and means for releasably securing the bivalved shells together. The cast is reuseable, permits convenient visual inspection of the broken limb without destruction of the cast, and provides for adjustment of the volume of the inside cavity and the pressure on the immobilized limb through adjustment of the inflatable liners.

3,580,249
AEROSOL NEBULIZERS
Kentaro Takaoka, Avenida Bosque de Saude No. 519, Sao Paulo, Brazil
Filed Sept. 16, 1968, Ser. No. 759,850
Int. Cl. A61m *11/02*
U.S. Cl. 128—194 **1 Claim**



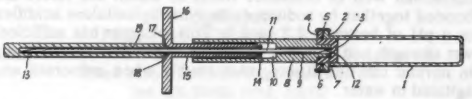
This invention relates to nebulizers designed to introduce aerosols into the respiratory systems of persons suffering from respiratory ailments.

3,580,250
OXYGEN GENERATORS
August Oroza, Santa Ana, Calif., assignor to U.S. Divers
Filed Mar. 14, 1969, Ser. No. 807,358
Int. Cl. A62b *7/08*
U.S. Cl. 128—203 **14 Claims**



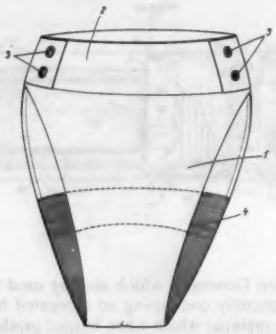
An Oxygen Generator which may be used for emergency purposes generally comprising an elongated housing for the receipt of a material which when burned produces a gas having a substantial amount of oxygen, said housing having a check valve permitting the release of the gas therefrom into a conduit connected to flexible tubing; said flexible tubing being connected to a plenum bag which feeds a face mask attached to a removable cover of the housing; said cover having a lanyard which releases hammers to fire percussion caps adjacent the oxygen-producing material of the container upon removal of said cover.

3,580,251
SELF-INJECTABLE AMPUL
Raymond Guiriec, Bourron-Marlotte, France, assignor to Societe a Responsabilite Limitee Laboraver, Longjumeau, France
Filed Apr. 11, 1969, Ser. No. 815,341
Claims priority, application France, Apr. 12, 1968, 148,075
Int. Cl. A61m *5/00*
U.S. Cl. 128—220 **7 Claims**



A self-injectable ampul comprises an ampul containing medication and sealed by a penetrable plug. A hollow needle sharpened at both ends carried by the ampul penetrates the plug, and upon continued inward movement severs the plug and carries the plug with it as a piston to eject medicant from the opposite end of the needle. The needle has an external collar mounted between the middle and the inner end thereof. A sleeve extends outwardly from the plug, surrounds substantially one-half the length of the needle, has a bore adjacent to the plug, adapted to receive a portion of the needle, and a counter bore for the remainder thereof having a diameter sufficient to receive the collar. A second sleeve having an external diameter such that its inner end can enter the counter bore in the first sleeve and an internal diameter for receiving the needle has fingers pieces extending radially outwardly therefrom at the outer end portion thereof. A sleeve extension surrounds the remainder of the needle and is removably attached to the outer end of the second sleeve. When the ampoule and the finger pieces are moved toward each other, the inner end of the second sleeve engages the collar and advances the needle so that the inner end thereof passes through the penetratable plug. The plug has a circular line of weakness so that the plug can be made to enter the ampoule and discharge the medication therefrom.

3,580,252
SANITARY TOWEL
Pierre A. Delort, 12, Avenue Marchal Foch, Nice, France
Filed Apr. 1, 1969, Ser. No. 812,236
Claims priority, application France, Feb. 20, 1969, 6,904,588
Int. Cl. A61f 13/16
U.S. Cl. 128—290 4 Claims



The invention covers a sanitary article constituted by a slip inside which is secured an absorbent lining for women's hygienic and medical purposes, said lining being constituted by superposed layers of fabric the size of which layers decreases in all directions from the outermost layer towards the innermost layer, said fabric being made at least partly of synthetic fibers welded together at a raised temperature.

3,580,253
SANITARY NAPKIN AND FLUSHABLE WRAPPER THEREFOR
Leo J. Bernardin, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Dec. 9, 1968, Ser. No. 782,479
Int. Cl. A61f 13/16
U.S. Cl. 128—290 15 Claims

A flushable pad wrapper for sanitary napkins comprising a nonwoven web of cellulosic fibers in which the fibers are bonded together by sodium carboxymethylcellulose acidified to a pH of between 2.2 to 2.0. This wrapper has sufficient wet strength and abrasion resistance to perform satisfactorily in normal use but disintegrates readily when immersed and agitated in water.

3,580,254
BANDAGE CONTAINING A MEDICINAL MATERIAL AND METHOD OF USING
Henry P. Stuart, 821-32nd Ave., Seattle, Wash.
Filed July 13, 1967, Ser. No. 653,181
Int. Cl. A61f 7/02
U.S. Cl. 128—268 3 Claims

A bandage for covering a break in the skin such as a cut, a scratch or a tear. The bandage contains a medicinal material which may be released and activated after the bandage has been applied to the break in the skin. The medicinal material is contained within a capsule which is ruptured after the bandage is applied.

3,580,255
ASPIRATOR
Hugo S. Cimber, 22 Seven Gables Road, Staten Island, N.Y.
Filed Apr. 8, 1968, Ser. No. 719,659
Int. Cl. A61m 1/00
U.S. Cl. 128—276 8 Claims

A disposable, sterilizable aspirator for removal of body fluids comprising a hollow needle which is mounted for axial movement within a support chamber, and is movable out of the chamber for a limited distance to penetrate a body cavity containing fluid which is to be collected. The needle may be spring-loaded. After the needle is in the body cavity, fluid may be withdrawn by connecting a syringe to the free end of a tube connected to the needle, or by a catheter passed through the hollow needle. The needle may be double-ended to penetrate a sealable diaphragm within the support chamber so that the fluid volume to be collected will be collected and covered by the diaphragm after the instrument is removed from its operating position. A bent wire can be inserted in the catheter tube to cause the tube to deflect as it leaves the end of the catheter tube.

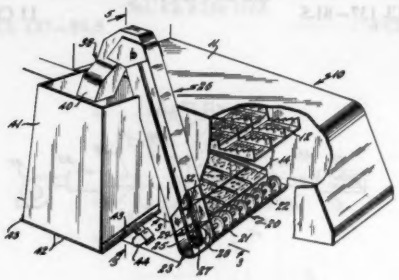
3,580,256
PRE-TIED SUTURE AND METHOD OF SUTURING
Jack E. Wilkinson, 2411 Divisadero, Fresno, Calif., and Victor G. Tahan, 1350 S. Orange Ave., Fresno, Calif.
Filed June 30, 1969, Ser. No. 837,590
Int. Cl. A61L 17/00
U.S. Cl. 128—335.5 8 Claims

A surgical suture or the like including a pair of butterfly-loops secured in superimposed registering relation by a casing through which the loops are visible, and a pair of tails extending from the loops. A suturing method wherein one of the tails is used as a suture which pierces the tissue to be sutured and is passed through the superimposed loops, the tails then being pulled tight to convert the interlooping formation into a square knot.

3,580,257
WEED SEED COLLECTOR FOR A THRESHER COMBINE
Earl E. Teague, Rte. 1, Box 92, Dermott, Ark.
Filed Dec. 24, 1969, Ser. No. 887,840
Int. Cl. A01f 12/42
U.S. Cl. 130—24 5 Claims

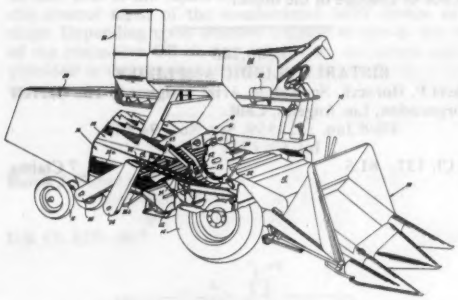
Apparatus mounted on a threshing machine or combine for removing and collecting weed and other obnoxious seeds during the threshing operation so that such seeds are not dis-

tributed and replanted in the field. The apparatus includes a transverse conveyor mounted on the rear of the combine and



located at the discharge position of larger separated tailings, an inclined conveyor and a hopper into which the seeds and tailings are discharged.

3,580,258
COMBINE
Clark E. Stroburg, and Eldon L. Stroburg, Blockton, Iowa
Filed Feb. 5, 1969, Ser. No. 796,749
Int. Cl. A01f *12/48*
U.S. Cl. 130—27HF **5 Claims**

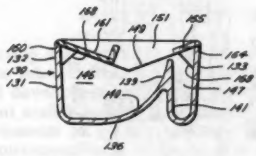


An airflow system for a combine harvester to more effectively float and carry away the straw and chaff and thus increase the efficiency of the separating and cleaning mechanism which includes strawwalkers and a cleaning shoe as is well known. This invention is designed for combines using a concave grate in relation to the threshing cylinder and includes air intake fans mounted to opposed sides of the housing to induce and direct a flow of air upwardly through the grate and over the strawwalkers and out of the machine at the rear and also over the conveyor below the grate rearwardly up the trough below the strawwalkers and then upwardly through the walkers to float the chaff and straw without preventing the heavier grain on the conveyor from reaching the cleaning shoe or the grain on the walker from falling through the openings therein onto the trough for delivery by gravity to the cleaning shoe mechanism. Preferably, two opposed streams of air are generated which impact intermediate the grate and the conveyor whereby a portion of the deflected airstream passes upwardly through the grate, over the strawwalkers and out of the rear of the machine with the rest of the deflected airstream passing up the trough, then upwardly through the strawwalkers and out of the machine at the rear. The speed of such fans may be selectively varied and likewise control means are provided for the volume of intake air.

3,580,259
TOBACCO FLAVORING
Werner Richard Gotthard Luttich, Willersweg 34l, Hamburg-Langenhorn, Germany
Filed Sept. 6, 1968, Ser. No. 758,144
Int. Cl. A24b *03/12, 15/08*
U.S. Cl. 131—144 **2 Claims**

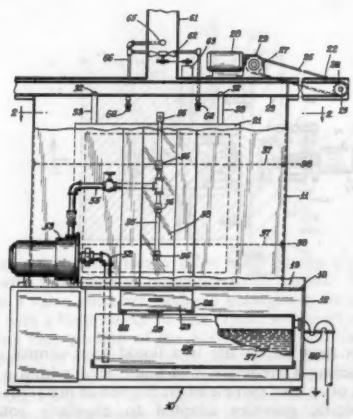
A method of influencing the smoke flavor of a tobacco by adding to the unsmoked tobacco a flavoring material which occurs in the smoke of natural tobacco, in which the flavoring material is a 2,5 - substituted pyrrole in which the 2 - substituent is selected from the group comprising; hydrogen, methyl -, and ethyl -, and the 5 - substituent is selected from the group comprising; formyl, acetyl, propionyl, carbomethoxy, carboethoxy, methylglyoxylyl, ethylglyoxylyl, and propandione - 1, 2 *1* - 1, the material being added in a quantity between 10 and 500 ppm.

3,580,260
ASHTRAY STRUCTURE
Robert D. Moore, 8124 Lockheed, Houston, Tex.
Continuation-in-part of application Ser. No. 773,994, Nov. 7, 1968, now abandoned. This application July 17, 1969, Ser. No. 847,782
Int. Cl. A24f *19/02, 19/14*
U.S. Cl. 131—242 **3 Claims**



Ashtray structures having large containers to receive the ashes and butts of cigarettes, and the like, wherein the container lid is supported inside of the container wall so that the lid is not dislodged when the container is lifted, the lid having a downwardly and inwardly sloping surface having cigarette supporting notches in an upwardly extending rim located at its lower edge for supporting cigarettes safely, the lid having an opening of limited size therethrough disposed to prevent ashes from blowing from the container. In some forms, snubbers are provided adjacent the ash and butt receptacle space.

3,580,261
PRINTING SCREEN CLEANER
John W. Key, 606 Ironwood Drive, Arlington Heights, Ill.
Filed May 12, 1969, Ser. No. 823,760
Int. Cl. B08b *3/02, 15/02*
U.S. Cl. 134—104 **11 Claims**



Printing screens are carried through a tunnel by an overhead conveyor. In an enlarged central section of the tunnel

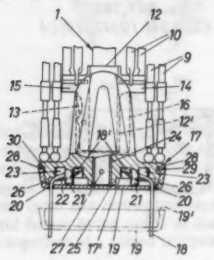
are opposed rows of spray heads to direct a cleaning solvent at the screens under pressure. A solvent with material removed from the screens drains into a removable separating tray to extract at least a portion of the material from the solvent. The solvent then drains into a sump from which it is pumped back to the spray heads. At opposite ends of the central cleaning section are entrance and exit sections having doors which are pushed aside by the screen as it is moved through the tunnel. A fan draws air in from the ends of the tunnel and discharges it out a stack. Fire quenching means has spray heads in the tunnel.

3,580,262

UMBRELLA HANDLE CARRYING STRAP ASSEMBLY

Heinz Weber, Hilden, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada

Filed Apr. 30, 1969, Ser. No. 820,603
Claims priority, application Germany, May 31, 1968, P 17 57 674.8
Int. Cl. A45b *11/00*
U.S. Cl. 135—20 **7 Claims**



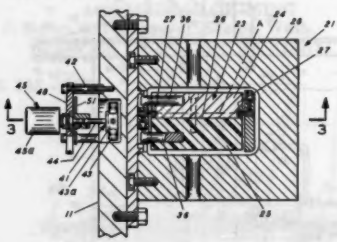
An umbrella handle having a handle gripping portion and a snap-lock cover, and a flexible carrying strap connected to the handle underneath the cover and extending therefrom.

3,580,263

PRESSURE LIQUID LEVEL INDICATOR

Walter D. Hughes, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 650,745, July 3, 1967, Pat. No. 3,498,320
Filed June 11, 1969, Ser. No. 870,865
1969, Ser. No. 870,865
Int. Cl. F17d *3/00*
U.S. Cl. 137—2 **2 Claims**



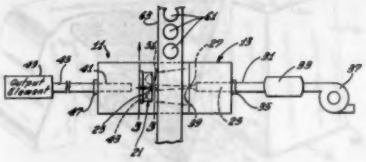
A sensor member for use in a liquid level control system for maintaining a predetermined liquid level within a vessel composed of at least two elements formed of materials of different specific gravities adapted to angularly rotate in response to deviations of the controlled liquid relative to an established elevational set-point level coincident with the location of the sensor member.

3,580,264

FLUIDIC DEVICE

Franklin C. Eickenhorst, Mason, Ohio, assignor to Dayton Reliable Tool & Mfg. Company

Filed Jan. 27, 1969, Ser. No. 794,242
Int. Cl. F15c *1/04*
U.S. Cl. 137—81.5 **11 Claims**



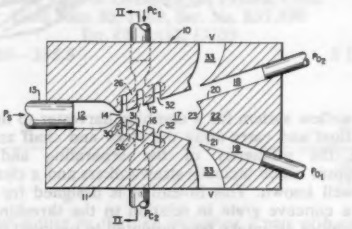
This disclosure describes a fluidic device which includes a primary supply orifice and a collector orifice with the collector orifice spaced from and generally confronting the primary supply orifice. Primary supply air is discharged from the primary supply orifice to form a primary airstream which flows into the collector orifice. To protect the primary airstream against ambient air currents, a protective fluid column at least partially surrounds the primary airstream and extends therealong to serve as a shield. The primary airstream may be disrupted or deflected in response to the presence or absence of the object which is being sensed. The presence or absence of a predetermined flow or pressure of primary air through the collector passage provides a signal indicating the presence or absence of the object.

3,580,265

BISTABLE FLUIDIC AMPLIFIER

Herbert P. Horacek, Scottsdale, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jan. 15, 1969, Ser. No. 794,842
Int. Cl. F15c *1/04*
U.S. Cl. 137—81.5 **7 Claims**

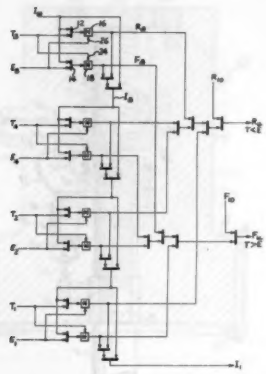


This bistable fluidic amplifier has a converging-diverging, beam- or power-jet-forming inlet nozzle, the diverging sides being extended to form an interaction chamber with laterally spaced output ports opposite the inlet nozzle. A control pressure manifold is disposed at each side of the interaction chamber and a plurality of spaced sets of control pressure inlet nozzles lead from the manifold to the interaction chamber. The control pressure inlet nozzles are of different widths and serve to distribute the control flow into the interaction chamber to deflect the power jet beam over a wide range of supply pressures. As the supply pressure is varied, the flow issuing from the inlet nozzle into the interaction region varies between subsonic, sonic and supersonic flow.

3,580,266
COMPARATOR CIRCUIT FOR DIGITAL POSITIONING CONTROL

Karl A. Brandenberg, Hayward, Calif., assignor to The Aro Corporation, Bryan, Ohio

Filed Mar. 21, 1969, Ser. No. 809,214
Int. Cl. F15c 1/12
U.S. Cl. 137—81.5 4 Claims

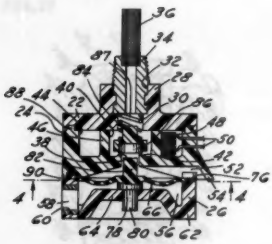


A pneumatic comparator circuit comprised of a plurality of stages arranged in serial order, each stage including a pair of pneumatic OR devices in series with a pneumatic NOT device. One of the inputs to each OR is also connected with the control input of the unassociated NOT device of the stage. Depending upon whether a signal to one or the other of the respective OR devices is present, an output signal is provided to the appropriate NOT device and finally to an ultimate output.

3,580,267
CONDENSATE VALVE

Ralph J. Baker, 655 N. Main St., Marine City, Mich.

Filed Sept. 26, 1969, Ser. No. 861,366
Int. Cl. F16k 49/00, 51/00
U.S. Cl. 137—203 11 Claims

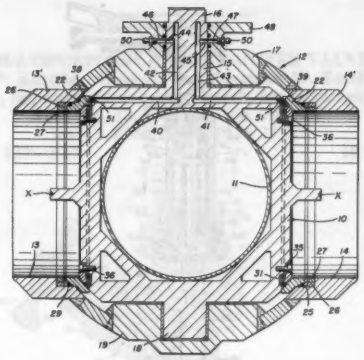


A condensate valve for connection to a compressed fluid tank, specifically an air tank associated with a compressor, to eject accumulated condensate in the tank, comprising a multiple piece valve body made of a tough, high impact plastic such as polycarbonate, each valve body section or part being internally configured to provide a passage for condensate through the valve normally closed by check valve means, and a chamber within which is disposed a diaphragm means having check valve actuating means responsive to diaphragm movement to momentarily open the check valve to exhaust condensate from the air mask.

3,580,268
LUBRICANT SEAL FOR ROTARY VALVE

Homer J. Shafer, 2300 Park Ave. W., Mansfield, Ohio

Filed Sept. 10, 1968, Ser. No. 758,787
Int. Cl. F16k 5/22
U.S. Cl. 137—246.22 6 Claims



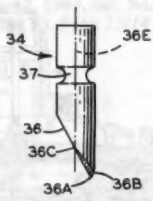
A valve having a rotary valve element with an exterior seating surface substantially abutting seating elements in the upstream and downstream ends of the valve housing, there being lubricant sealing grooves in the seating surface or in the seating elements to provide lubricant seals at the upstream and downstream ends of the valve in its closed position, and separate lubricant passageways in the valve element for connecting with said sealing grooves and extending into and laterally out of the rotary valve stem, there being lateral lubricant supply ports in the stem housing for registering with said passageways in the closed position of the valve.

The invention relates generally to rotary valves, and more particularly to lubricant sealing construction for ball valves.

3,580,269
DEBRISLESS TAP VALVE WITH BACKRAKED PIERCING ELEMENT

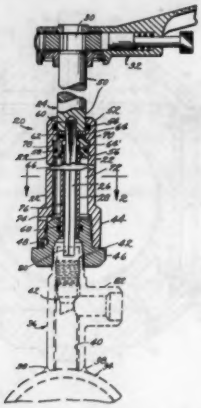
Henry Ehrens, Bayside, N.Y., and Sidney Weiner, Cresskill, N.J., assignors to Sealed Unit Parts Co., Inc., Allenwood, N.J.

Filed Apr. 29, 1969, Ser. No. 820,207
Int. Cl. F16k 43/00; F16l 55/00
U.S. Cl. 137—318 4 Claims



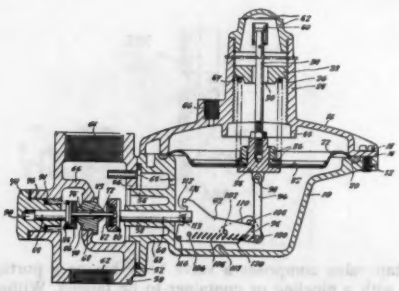
A tap valve comprises a valve body having a portion to mate with a pipeline or container to be tapped. Within the body is a valve chamber having a passageway for communication with a fluid source or sink. There is also an opening in a mating face portion of the body for communication with the pipeline or container. A threaded passageway supports a valve stem member in the body which is floatingly coupled to a piercing element. The coupling is such that axial translational motion is transmitted by the stem member to the piercing element whereas the stem member is free to rotate with respect to the piercing element. The piercing element is a truncated cylinder with a backrake along its apex edge.

3,580,270
WRENCH
Wilbur R. Leopold, Jr., and John J. Smith, Decatur, Ill., assignors to Mueller Co., Decatur, Ill.
Filed Sept. 12, 1969, Ser. No. 857,446
Int. Cl. F16k 43/00
U.S. Cl. 137—318 5 Claims



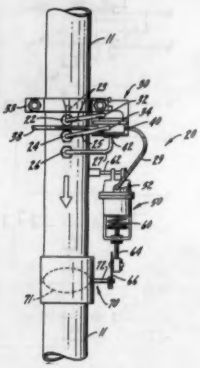
A wrench or tool, of the type disclosed in U.S. patents to Mueller et al., No. 2,829,429, granted Apr. 8, 1958 and Smith No. 3,038,484 granted June 12, 1962, and wherein the rod portion, which is operatively connectable to the part, or structure to be manipulated, in the pressure chamber, is detachably connected to the piston-carrying plunger and a tubular sleeve is also detachably connected to the plunger in surrounding relation to the rod portion defining an annular passageway communicating with a chamber on one side of the piston whereby pressure from the region being worked will be utilized to assist positioning and operation of the wrench. The rod portion is solid, and the tubular sleeve is arranged coaxially therewith.

3,580,271
GAS PRESSURE REGULATORS
Sydney Farrer, Sheffield, England, assignor to The Bryan Donkin Company Limited, Chesterfield, England
Filed Dec. 13, 1968, Ser. No. 783,652
Int. Cl. F16k 17/64
U.S. Cl. 137—458 3 Claims



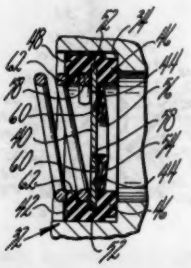
A diaphragm operated gas regulator has an operating spindle carrying a regulator valve member and a cutoff valve member respectively able to close a pair of orifices arranged back-to-back so that the cutoff valve member provides low-pressure cutoff, the connection between the operating spindle and the diaphragm including a spring loaded overcenter trip linkage so that when gas pressure becomes excessively high the linkage trips to "break" the connection and to close the cutoff valve so as also to provide high-pressure cutoff.

3,580,272
AUTOMATIC AIR FLOW REGULATOR
Russell G. Sherman, la Verne, and Robert P. Koenig, Torrance, Calif., assignors to Powers Regulator Company, Skokie, Ill.
Filed Aug. 14, 1969, Ser. No. 849,966
Int. Cl. G05d 7/03
U.S. Cl. 137—486 3 Claims



An automatic air flow regulator for use in the airline of a pneumatic tube system for automatically maintaining a preset velocity of air flow within the airline regardless of the load contained throughout the pneumatic tube system comprising a sensing means adapted to sense the pressure velocity of the air in the airline and a control means connected to the sensing means for regulating the velocity of the air flowing through the airline in response to the sensing means.

3,580,273
TWO-WAY CHECK VALVE
Ernest I. Schwarz, Middletown, Conn., assignor to The EIS Automotive Corporation, Middletown, Conn.
Filed Mar. 20, 1969, Ser. No. 808,934
Int. Cl. F16k 17/18
U.S. Cl. 137—493.2 1 Claim



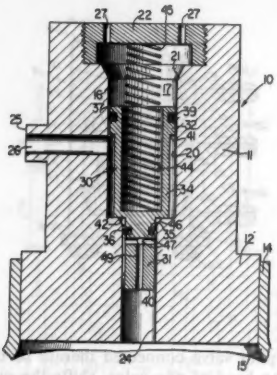
A two-way check valve comprising a diaphragm and metal disc unit for use particularly in association with the discharge port of a master cylinder for a vehicle-braking system. Flow outwardly of the cylinder in the braking stroke is accommodated through the disc and diaphragm while flow around the unit is prevented, and flow inwardly of the cylinder during the return stroke is accommodated around the unit while flow through the unit is prevented.

3,580,274

COMBINED PRESSURIZING AND RELIEF VALVE FOR FIRE EXTINGUISHERS

Arne Hansen, New York, N.Y., assignor to Walter Kidde & Company, Inc., Belleville, N.J.

Filed Dec. 2, 1968, Ser. No. 780,400
Int. Cl. F16k *17/18*
U.S. Cl. 137—493 3 Claims



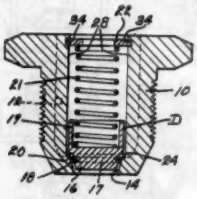
A combined pressurizing and relief valve in the control head of a fire extinguisher including a spring-biased valve member controlling flow between the external fill port and the pressure vessel of the extinguisher and between the fill port and venting openings. The valve member is provided with a small piston area in communication with the pressure vessel for operating the valve to allow excessive pressure within the vessel to flow out through the fill port. The valve member is also provided with a large piston area in communication with the fill port for operating the valve first to allow charging fluid entering the fill port to flow to the pressure vessel and, when the vessel is properly pressurized, to further operate the valve to allow the charging fluid to flow out through the venting openings.

3,580,275

VALVE

John R. Hanson, and Karl B. Pierson, Warren, Pa., assignors to Tiona-Betts, Inc., Warren, Pa.

Filed Feb. 24, 1969, Ser. No. 801,321
Int. Cl. F16k *15/02*
U.S. Cl. 137—516.29 1 Claim



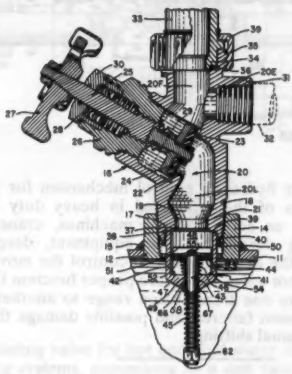
A combination pressure relief and check valve including an elongated valve body having a longitudinal bore therethrough with a tapered restricted bore portion at one end thereof forming a tapered valve seat. Reciprocably disposed in the bore is a valve disc having a tapered end portion which contacts the tapered valve seat to form a fluid-sealing engagement therewith. The disc tapered portion may have an annular O-ring disposed circumferentially thereon to provide a positive fluid seal with the valve seat. A coiled spring is longitudinally disposed in the bore and is compressed between the disc and a spring retainer locked in the opposite end of the bore to bias the disc against the seat in a normally closed position. An annular bore shoulder is formed at the juncture of the bore and the restricted bore portion, and the disc is formed with a coacting disc shoulder to seat against such bore shoulder to restrict travel of the disc into the tapered seat. The bore wall has elongated longitudinal ridges formed therein to guide the disc in the bore and to permit escape of pressurized fluid past the valve seat and through the spaces between the ridges to the atmosphere.

3,580,276

MULTIPURPOSE LIQUID TRANSFER VALVE

Christ P. Korbilas, Chicago, and Raymond W. Smith, Park Ridge, Ill., assignors to Astro Controls, Inc., Chicago, Ill.

Filed Jan. 23, 1969, Ser. No. 793,527
Int. Cl. F16k *11/00*; F11k *21/00*
U.S. Cl. 137—517 10 Claims



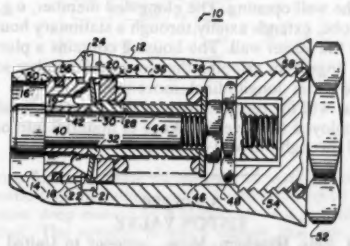
A flow control three position dual spring controlled valve which snaps shut as an excess flow check valve with flow in one direction through a shutoff valve with high degree of accuracy, and, with flow in the opposite direction, accommodates maximum flow capacity permitted by the shut off valve. The flow control valve preferably is protectively disposed within a tank and is constructed to withstand without damage the hammerlike blows of valve ports rapidly propelled in their action.

3,580,277

RELIEF VALVES WITH CONTROLLED PRESSURE OVERRIDE

Roger W. Gettel, Bloomfield Hills, Mich., assignor to Sperry Rand Corporation, Troy, Mich.

Filed Mar. 12, 1969, Ser. No. 806,488
Int. Cl. F16k *15/14*
U.S. Cl. 137—525.5 10 Claims



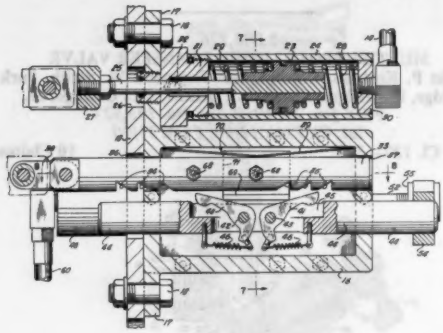
A contaminant-resistant relief valve comprising a housing having an inlet connected to an outlet with a preloaded, disc-type valve adapted to prevent communication between said inlet and said outlet below a predetermined pressure setting and means for resiliently biasing said disc-type valve, said means being of an adjustable nature.

3,580,278

FLUID-ACTUATED TRANSMISSION CONTROL

Lewis D. Bennett, Dallas, Tex., assignor to Bennett Enterprises, Inc., Addison, Tex.

Filed July 2, 1969, Ser. No. 848,377
Int. Cl. F16k *37/00, 31/44*
U.S. Cl. 137—554 **11 Claims**



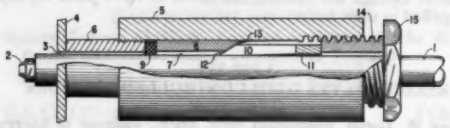
A pneumatic or hydraulic control mechanism for power shift transmissions of the type used in heavy duty power equipment, such as earth moving machines, cranes and material handling devices, marine equipment, deep well drilling rigs, and the like, whereby to control the movement of the range selector valve and insure proper function thereof when shifting from one transmission range to another, thus avoiding transmission failures, and possible damage thereto, through faulty manual shifting.

3,580,279

LOCK AND SEAL MEANS FOR LONGITUDINALLY MOVABLE MEMBER INSERTED INTO A VESSEL

Dale K. Harris, Monroe, La., assignor to Cities Service Company, New York, N.Y.

Filed Dec. 23, 1968, Ser. No. 786,180
Int. Cl. F16l *27/12*
U.S. Cl. 137—590 **16 Claims**



In a fluid-containing vessel having a longitudinally movable elongated member which extends into the vessel through an opening in the wall thereof, means for altering the insertion distance of the member while preventing leakage of material through the wall opening. The elongated member, e.g. a conduit or probe, extends axially through a stationary housing attached to the vessel wall. The housing contains a plurality of clamping fingers for gripping the elongated member so that it is secured from longitudinal movement. The grip can be released at will for repositioning of the member. Seal means is also employed to prevent leakage of material into or out of the vessel through the wall opening.

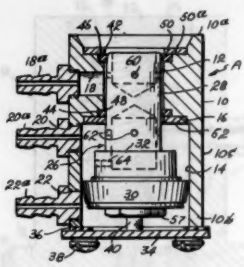
3,580,280

PISTON VALVE

Robert D. Reis, Hingham, Mass., assignor to United Electric Controls Company, Watertown, Mass.

Filed Oct. 10, 1969, Ser. No. 865,458
Int. Cl. F16k *11/10;* **F15b** *11/00*
U.S. Cl. 137—596.14 **11 Claims**

A valve block containing axially aligned chambers one of which contains a port midway between its ends and the other three ports, two at one end and one at the other. A piston is mounted in the chambers for movement axially therein. The piston has a head to which pressure is adapted to be supplied through one of the ports to shift the piston axially and a stem containing ports which in one position of the piston permits flow of pressure fluid through the valve and in the other position blocks flow through the valve. In conjunction two such valves and a pilot valve connected thereto so that pressure supplied to the head of one valve, shifts the piston therein from a normally closed to an open position, which, in turn, supplies pressure to the head of the other valve which is normally open to shift the piston therein to a closed position, provide for switching the pressure from a source of pressure to one or the other of two activities.

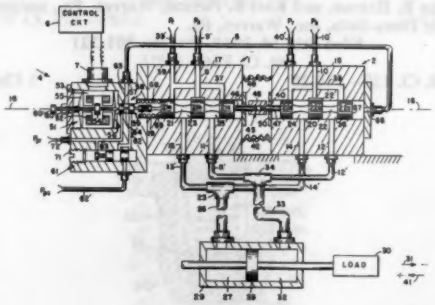


3,580,281

CONTROL VALVE

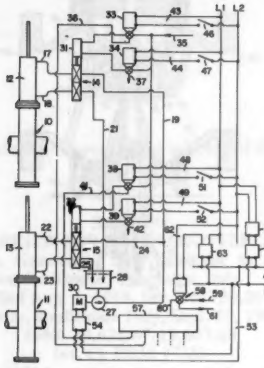
Rudolph S. Petersen, Brookline, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Continuation of application Ser. No. 688,771, Dec. 7, 1967, now abandoned. This application Oct. 7, 1969, Ser. No. 866,105
Int. Cl. F16k *21/00;* **F01b** *23/02;* **F15b** *13/043*
U.S. Cl. 137—596.16 **11 Claims**



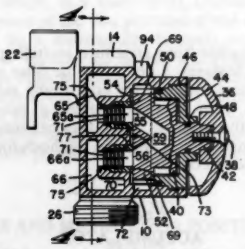
A plurality of spool-type valves are cascaded in tandem so that the spools of the valves are connected and respond to an input control force derived from a control mechanism, which is applied to one spool which acts against a bias force exerted on another spool so that the spools are positioned in unison and one spool delivers position feedback to the control mechanism so that the valves uniformly meter fluid flow at substantially the same pressure to a power actuator, whereby a signal power actuator may receive the total flow from all of the valves.

3,580,282
VALVE-OPERATING SYSTEM
Lyle R. Van Arsdale, and Francis M. Lathrop, II, Houston, Tex., assignors to M & J Valve Company, Houston, Tex.
Continuation-in-part of application Ser. No. 719,338, Apr. 8, 1968, now abandoned. This application Oct. 24, 1968, Ser. No. 770,270
Int. Cl. F17d *1/00*
U.S. Cl. 137—608 2 Claims



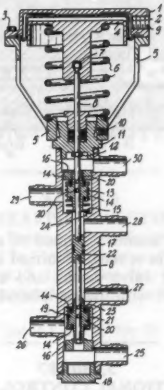
A system including power operators for two or more main flow control valves. Devices (e.g., four-way valves) serve to control supply of energy (e.g., liquid under pressure) to the power operators, and in turn are conditioned by electrical means. In the event of failure of the electrical power supply, both of the control devices are set whereby the main valves are moved to or remain in a safe condition (e.g., closed).

3,580,283
SINGLE LEVER VALVE FOR AUTOMATIC WASHERS
Robert W. De Vries, Grand Rapids, Mich., assignor to Wolverine Brass Works, a Division of Wolverine Industries, Inc., Grand Rapids, Mich.
Filed Jan. 24, 1969, Ser. No. 793,689
Int. Cl. F16k *11/06*
U.S. Cl. 137—625.18 11 Claims



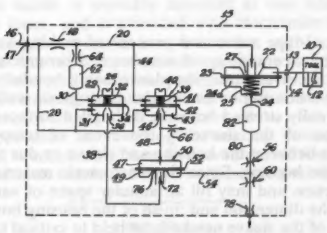
The valve is a single-lever shutoff valve for simultaneously terminating flow of hot and cold water supplied to an automatic washer or similar machine. The valve embodies a minimum number of simple and inexpensive parts, and is operable with great ease and despatch, to discourage the hazardous practice of leaving the machine elements pressured with hot and cold water when not in use.

3,580,284
REGULATING VALVE FOR WATER MIXING IN AIR CONDITIONING SYSTEMS
Giancarlo Bini, and Gianfranco Tamoni, Milano, Italy, assignors to Carlo Gavazzi S. P. A., Milano, Italy
Filed Apr. 2, 1969, Ser. No. 812,769
Claims priority, application Italy, Apr. 3, 1968, 14,762A/68
Int. Cl. F16k *31/165*, *11/00*
U.S. Cl. 137—625.18 2 Claims



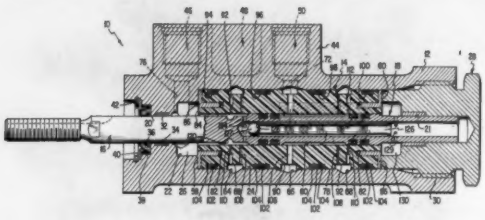
Regulating valve for hot and cold water mixing in air-conditioning systems, comprising as a unit two three-way valve bodies having a single servomotor and stem for operation thereof, such that a substantial overall size reduction is provided in air-conditioning cabinet manufacturing, the valve being controlled by a pneumatic regulator responsive to temperature, moisture or pressure conditions.

3,580,285
WORK CONTROL DEVICE FOR FLUID DRIVEN APPARATUS
Karl A. Brandenberg, Hayward, Calif., assignor to The Aro Corporation, Bryan, Ohio
Filed Aug. 28, 1969, Ser. No. 853,632
Int. Cl. F15b *11/02*
U.S. Cl. 137—624.2 8 Claims



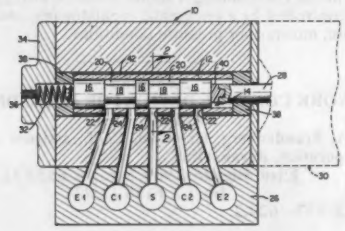
A device for controlling the amount of work performed by a pneumatic tool including a pair of sensors adapted to sense the pressure drop caused by a restriction in a pneumatic line to the tool. The sensors produce signals that are summed thereby providing a pressure supply through a metered orifice whenever the tool begins work output. The metered orifice delays the pressure supply signal to a valve in the pneumatic line downstream from the restrictor in that line. The valve closes upon receipt of the pressure supply signal thereby stopping the tool. The sensors and orifices the device are adjustable in order to compensate for various work tools, workloads and time of operation of the device.

3,580,286
SPOOL VALVE
Sidney D. Bash, Indianapolis, Ind., assignor to Stewart-Warner Corporation, Chicago, Ill.
Filed Apr. 4, 1969, Ser. No. 813,689
Int. Cl. F16k 11/07
U.S. Cl. 137—625.68 5 Claims



A unitary sleeve member formed of a nylon-molybdenum disulfide composition is fixedly carried in concentric fashion intermediate of the valve casing and a reciprocating valve spool and in contact with the peripheral surface of the valve spool.

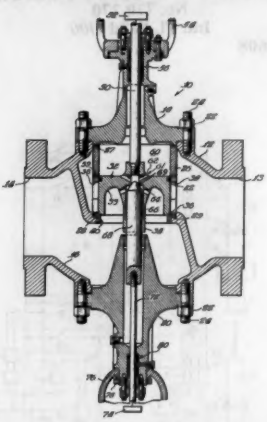
3,580,287
DIRECTIONAL CONTROL VALVE
William I. McLaughlin, Littleton, Colo., assignor to C. A. Norgren Co., Littleton, Colo.
Filed Feb. 10, 1969, Ser. No. 798,087
Int. Cl. F16k 11/07
U.S. Cl. 137—625.69 9 Claims



A spool-type valve and process of making same characterized by a ceramic spool member and ceramic sleeve which slidably receives same, the sleeve being bonded to the bore of a valve housing by an annular elastomeric wall which may be internally stressed between its bonded surfaces to prevent distortion of the sleeve in the event of temperature differences between the housing and sleeve or due to age warping of the housing. Since the elastomeric material is applied by injection and may fill an annular space of variable radial width, the dimension and finish of the housing bore and outer surface of the sleeve need not be held to critical tolerances.

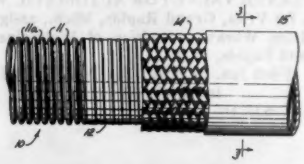
3,580,288
FLOW CONTROL DEVICE INCLUDING A PRESSURE-BALANCED SINGLE-SEATED VALVE PLUG
Charles B. Schuder; Victor E. Skov, and Richard F. Lytle, Marshalltown, Iowa, assignors to Fisher Governor Company
Filed Oct. 18, 1968, Ser. No. 768,852
Int. Cl. F16k 11/22
U.S. Cl. 137—630.13 5 Claims

A flow control device providing for large flow capacity together with tight shutoff by the use of large pressure balanced single-seated valve plug having passage means therethrough, with a separate single-seated valve plug for opening and closing the passage means, the large valve plug



being opened and closed with a minimal force output actuator.

3,580,289
FLEXIBLE HOSE CONSTRUCTION
Ralph E. James, Jr., Wyomissing, and Robert B. Koch, Reading, Pa., assignors to The Polymer Corporation
Filed Jan. 9, 1967, Ser. No. 607,985
Int. Cl. F16l 11/04, 11/18
U.S. Cl. 138—121 1 Claim

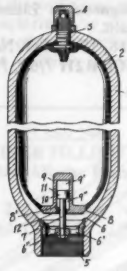


Corrugated flexible hose structure including one or more of the following features: a compressible filler material in the grooves of the hose sidewall for controlling sidewall flexure; a high tenacity yarn in the grooves; a braided covering bonded only to the crests of the ridges between the grooves; methods for filling the grooves; and methods for applying and bonding the braided covering.

3,580,290
ACCUMULATOR
Kazuo Sugimura, and Nobuyuki Sugimura, 1416 Sodeshi-cho, Shimizu-shi, Shizuoka-ken, Japan
Filed May 27, 1969, Ser. No. 828,120
Claims priority, application Japan, June 1, 1968, 43/37716
Int. Cl. F16l 55/04
U.S. Cl. 138—31 3 Claims

An accumulator comprises a rigid container having a valve seat at its fluid inlet and a bladder therein carrying a valve element that engages the valve seat when the bladder is fully expanded. There is a dashpot connection between the valve element and a fixed spider in the inlet, to guide the valve ele-

ment and so retard its motion when it is near the valve seat as to encourage radial rather than axial expansion and contraction of the bladder, thus preventing rubbing of the bladder on the container.

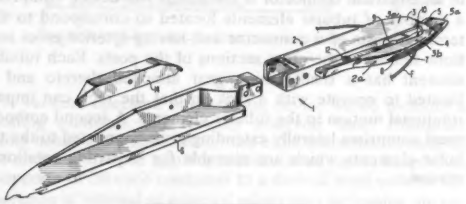


3,580,291

FILLING CARRIER FOR USE IN SHUTTLELESS LOOMS

Mario Piccoli, Gazzaniga, Italy, assignor to Somet S.p.A. Societa Meccanica Tessile, Gazzaniga, Italy

Filed Aug. 5, 1968, Ser. No. 750,267
Claims priority, application Italy, Sept. 19, 1967, Mar. 6, 1968, 20,635/67;13,607/68
Int. Cl. D03d *47/20*
U.S. Cl. 139—122 **1 Claim**



A feeding gripper that transfers weft yarn to a drawing gripper in the warp sheds of a shuttleless loom comprises an open box-type structure or main body of plastic with a laterally projecting front wing. The wing is bifurcated by a forwardly opening horizontal slot, into superposed lower and upper jaws that receive between them the weft yarn. The upper jaw is in two laterally spaced portions one of which extends forwardly from the forward end of the main body and the other of which, at a lower level, overlies the lower jaw. The forward ends of the two portions of the upper jaw are interconnected by a downwardly laterally outwardly inclined portion, and a vertical fin having a forwardly downwardly inclined upper edge is disposed on the inner side of the forward end of the lower jaw. A resilient yarn-checking device is provided on the lower jaw, between the two portions of the upper jaw, comprising metallic laminae and an adjustable leaf spring which presses them against the lower jaw.

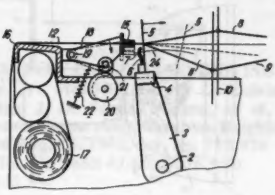
3,580,292

APPARATUS AND METHOD FOR POSITIONING WARP SHEDS

Zdenek Rambousek, Liberec, Czechoslovakia, assignor to Elitex, Zavody Textilniho Strojirenstvi, Liberec, Czechoslovakia

Filed June 2, 1969, Ser. No. 829,374
Claims priority, application Czechoslovakia, June 3, 1968, PV4069-68
Int. Cl. D03d *49/00*
U.S. Cl. 139—190 **7 Claims**

During weaving of a fabric and during reciprocation of a race comb for a gripper shuttle along a part-circular path with the slay, reciprocating guide means move a fabric portion with an open warp shed transversely to the path of the race comb so that the race comb is entered into the warp shed near the front position thereof, and is located substantially at the center of the warp shed when arriving at its rear position in which a gripper shuttle is picked through the race comb and warp shed.

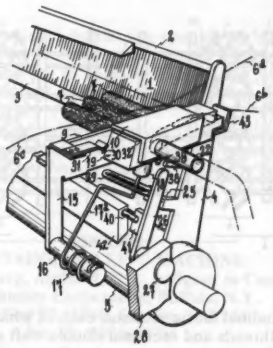


3,580,293

WEAVING MACHINE

Theodorus Fransen, Deurne, Netherlands, assignor to N. V. Machinefabriek L. Te Strake, Deurne, Netherlands

Filed Sept. 3, 1968, Ser. No. 756,973
Claims priority, application Netherlands, Sept. 15, 1967, 6712677
Int. Cl. D03d *49/70*
U.S. Cl. 139—303 **5 Claims**



A suction nozzle is movably mounted at one side of the shed of the loom, and is provided with mechanism for displacing the suction nozzle, in synchronism with a beating movement of the reed, from an active position for receiving the free end of a weft to an end position. A locking device is provided for retaining the suction nozzle in such end position during the succeeding reverse movement of the reed, and apparatus is provided for releasing the locking device at the beginning of a succeeding reverse movement of the reed to permit the suction nozzle to return to its active position.

3,580,294

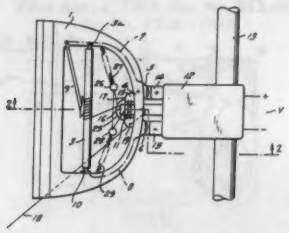
METHOD AND APPARATUS FOR DETECTING AN UNDESIRED CONDITION OF A SHUTTLE-CARRIED WEFT YARN

Jakob Muller, 5262 Frick, Aargau, Switzerland

Filed Jan. 23, 1969, Ser. No. 793,617
Claims priority, application Switzerland, Jan. 24, 1968, 1106/68
Int. Cl. D03d *51/34*, *45/10*
U.S. Cl. 139—371 **8 Claims**

Running out of the weft yarn of a bobbin carried by a shuttle, or breakage of the weft yarn, are sensed independently, and upon sensing of such a condition, the respective sensing means moves to a control position. In at least one end position of the shuttle, an actuated sensing means in the control

position engages in the beat-up position of the slay, stationary contact means or switch means for closing a control cir-



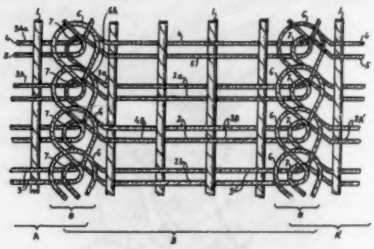
cuit so that a control impulse for stopping the loom is produced.

3,580,295

PARTLY WOVEN AND PARTLY KNITTED FABRIC AND APPARATUS FOR MAKING THE SAME

Miloslav Jisa, Liberec; Josef Zmatlik; Josef Mohelnicky, and Bohumil Milichovsky, Prague, Czechoslovakia, assignors to Stantni Vyzkumny Ustav Textilni, Liberec, Czechoslovakia

Filed Dec. 23, 1968, Ser. No. 786,863
Claims priority, application Czechoslovakia, Dec. 22, 1967, 9120/67
Int. Cl. D03d *25/00*
U.S. Cl. 139—383 **11 Claims**



Longitudinal fabric sections, each of which include a group of warp threads and sectional double-weft elements, are connected to each other by a wale of chain stitches extending between two woven fabric sections in warp direction and tying the end loops and connecting loops of the double-weft elements of the adjacent fabric sections.

3,580,296

ARTICLES WOVEN FROM NONEXTENSIBLE MATERIALS

Ernest P. Carter, Durham; Robert P. Bell, Jr., Cary, and Alton P. Carroll, Jr., Durham, N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed July 11, 1968, Ser. No. 744,078
Int. Cl. D03d *15/02*
U.S. Cl. 139—425 **6 Claims**

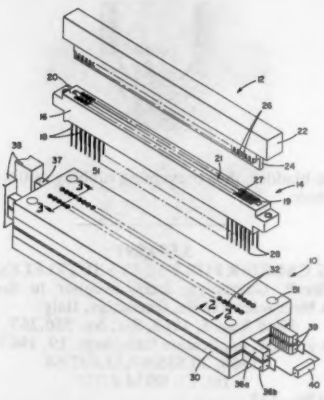
A method and apparatus for weaving a composite fabric having a mixed warp of alternating ends of extensible and nonextensible yarns, and a fill of a flexible, extensible yarn.

3,580,297

DEVICE FOR TWISTING AND ALIGNING TERMINAL POSTS OF AN ELECTRICAL CONNECTOR

Frank G. Spadoni, Jr., Orange, N.H., and Michael P. Kleban, Oakville, Conn., assignors to Litton Precision Products, Inc., Beverly Hills, Calif.

Filed Sept. 18, 1968, Ser. No. 760,404
Int. Cl. B21f *7/00, 1/02*
U.S. Cl. 140—149 **6 Claims**



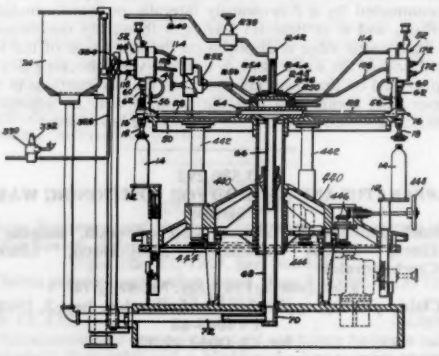
A device for twisting as well as aligning the terminal posts of an electrical connector is disclosed. The device comprises a number of tubular elements located to correspond to the terminal posts of a connector and having interior cross sections similar to the cross sections of the posts. Each tubular element has a small pinion gear attached thereto and is located to operate with a rack so that the rack can impart rotational motion to the tubular elements. A second embodiment comprises laterally extending arms connected to the tubular elements which are movable for imparting rotational motion.

3,580,298

CONTAINER FILLING MACHINE

William H. Trusselle, Braintree, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.

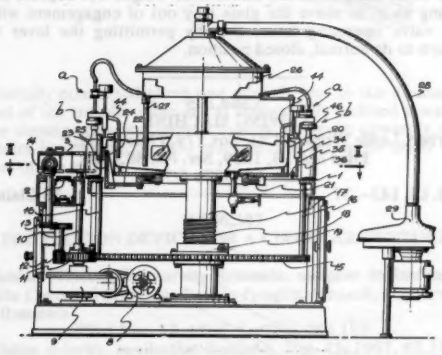
Continuation of application Ser. No. 550,390, May 16, 1966, now abandoned. This application Sept. 12, 1969, Ser. No. 857,593
Int. Cl. B65b *3/26*
U.S. Cl. 141—40 **15 Claims**



A container filling machine provided with a plurality of filling heads having provision for automatically starting and

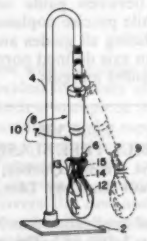
stopping the filling operation in successive filling heads which includes pneumatically operated control means for each filling head for detecting a predetermined height of the material in its container and pneumatically operated means responsive thereto for discontinuing the filling operation, the invention being characterized by improved control means facilitating adjustment of the control units for the various filling heads to obtain uniform filling heights in successive containers.

3,580,299
CONTAINER FILLING DEVICE
Jorge Alkalay, and Oton Alkaly, Ramon Lista 5376, Buenos Aires, Argentina
Filed Nov. 21, 1968, Ser. No. 777,819
Int. Cl. B65b *31/00*
U.S. Cl. 141—59 **9 Claims**



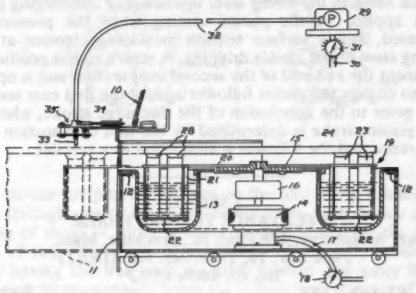
A vacuum operated bottle filling device which includes a rotating platform and rotating reservoir tank. Container filling heads are positioned on the circumferential surface of the tank and include upper and lower head pieces adapted to cooperate to fill each container to a desired level without the operation of internal or external valves thus increasing the efficiency and simplifying the construction in relation to prior art apparatus of this type.

3,580,300
VACUUM APPARATUS AND SNORKEL NOZZLE
William H. Dunn, Jr., Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.
Filed July 25, 1969, Ser. No. 844,887
Int. Cl. B65b *31/04*
U.S. Cl. 141—65 **6 Claims**



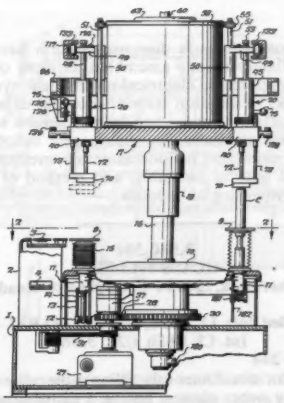
A vacuum operated device for withdrawing air from a package, lifting the package and positioning the package for closing. The device includes only a few parts and has two main assemblies connected by a quick clamp. The parts may be disassembled and assembled by hand without the use of tools for cleaning. One of the assemblies has two subassemblies, an axial suction tube and an axial slide handle which are mounted in the first vacuum chamber and the other assembly includes a piston and a cylinder. A vacuum nozzle is provided having a sump. A new vacuum operated apparatus construction is also provided wherein a permanently open relief vent is present.

3,580,301
CONTINUOUS FLOW LIQUID DISTRIBUTING SYSTEM
Samuel Nejame, Jr., Medfield; George C. Kondel, Jamaica Plain, and Italo J. De Santis, Milford, all of, Mass., assignors to Damon Corporation, Needham Heights, Mass.
Filed Aug. 15, 1968, Ser. No. 752,976
Int. Cl. B65b *43/60;* **B67c** *3/00*
U.S. Cl. 141—131 **18 Claims**



Continuous flow liquid distributing systems are disclosed in which a turntable has a concentric series of abutting funnels for controlling delivery to subjacent containers with liquid continuously delivered thereto from a pump controlled source. The operation of the turntable drive, of the pump, or of both is variable and where there are two or more series of funnels, means are provided to shift the delivery nozzle from a position over the last funnel of one series to the first funnel of another series.

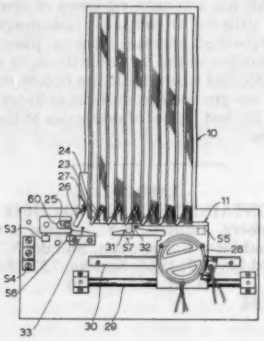
3,580,302
CONTAINER FILLING MACHINE
James H. Riesenberg, Amherst, N.Y., assignor to Consolidated Packaging Machinery Corporation, Buffalo, N.Y.
Filed May 27, 1968, Ser. No. 732,151
Int. Cl. B65b *57/06*
U.S. Cl. 141—141 **14 Claims**



A container filling machine having a container supporting tray and a filling head including a charging cylinder and a filling stem, the tray and head being mounted for movement

through a predetermined path. A piston is movable in the cylinder and a follower connected to the piston successively engages a first cam section extending along the path for moving the piston in a first direction to draw product from a source into the cylinder and a second cam section extending along the path for moving the piston in the opposite direction to discharge product from the cylinder. A spool-type valve is slidable between a first position placing the charging cylinder in communication with the source and a second position placing the cylinder in communication with the stem, the valve shifting arrangement being disabled prior to the discharge stroke in the absence of a container to be filled whereby the product is returned from the cylinder to the source. The cam sections are pivotally supported for movement in opposite directions to selectively vary the rise of the first cam section and thereby vary the piston stroke and consequently the volume of product dispensed. A spring-loaded check valve in the filling stem opens under discharging pressure applied by the piston, closing when the pressure is released, and a surface tension increasing element at the filling stem outlet avoids dripping. A return cam is positioned adjacent the exit end of the second cam section and is operable to engage the piston follower against the first cam section just prior to the conclusion of the discharge stroke, whereby the piston stroke is determined by the first cam section as a reference and the follower is eliminated as a variable.

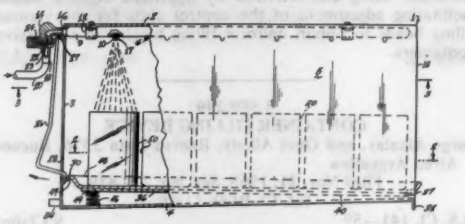
3,580,303
INFLATABLE TOY DISPENSER
Robert A. Roberge, 438 Pearl St., Brockton, Mass.
Filed Apr. 16, 1969, Ser. No. 816,627
Int. Cl. B65b *43/42*
U.S. Cl. 141—173 **5 Claims**



A coin operated balloon dispenser system having supply racks of uninflated ballons assembled as units on inflating needle-studs. Automatic electrical-mechanical system takes units from racks to inflation station where an inflator tube is brought into inflating connection from a helium supply, and inflated balloons are thereafter disengaged; subcombination of needle stud uninflated balloon assembly; method of needle stud-uninflated balloon assembly; and method of automatic inflation and dispensing of balloons.

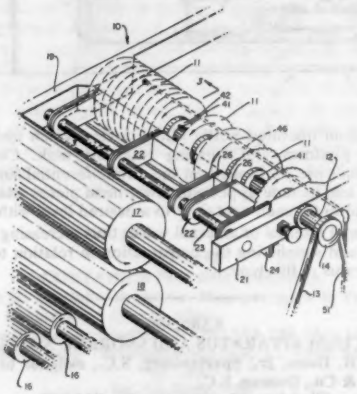
3,580,304
GLASS FILLER
Robert W. Chermack, 14424 Spring Lake Road, Hopkins, Minn.
Filed July 11, 1968, Ser. No. 744,033
Int. Cl. B65b *3/28, 3/36*
U.S. Cl. 141—244 **5 Claims**

Apparatus for simultaneously filling a plurality of receptacles, especially water glasses, having a distribution manifold with a plurality of downwardly directed discharge spouts and a flow control valve connected to the manifold, the operation of the valve being controlled by a lever positioned to be actuated in response to the movement of a glass tray into position beneath the aforesaid discharge spouts. The flow control valve may be a flush valve which passes a predetermined volume of water when its operating lever is tripped, or it may be an ordinary on-off valve which must be actuated to its open and closed positions. In the latter case, a spring-supported, weight-responsive platform supports the glass tray,



and when the glasses are filled, their weight will depress the spring so as to move the glass tray out of engagement with the valve operating lever, thereby permitting the lever to return to its normal, closed position.

3,580,305
SAWING MACHINE
Herbert Leslie Wright, P. O. Box 179, Philo, Calif.
Filed Mar. 3, 1969, Ser. No. 803,580
Int. Cl. B27b *5/34*
U.S. Cl. 143—37 **13 Claims**

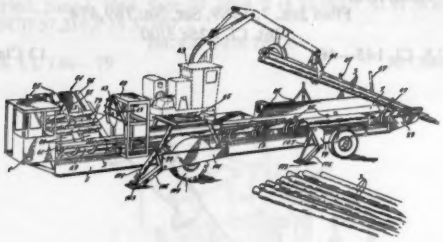


A sawing machine with a number of thin blades carried on an arbor includes edge margins guided by fluid bearings defined between guide surfaces disposed on each side of each blade. The spacing between guide surfaces is varied in precise parallelism while precise coplanar blade alignment is derived from consolidating all guides and blades together by forces applied along an axis defined normal to the blades and radially within their guided margins.

3,580,306
MOBILE TREE SLASHER
Jean Paul Tanguay, St. Prime, Quebec, Canada, assignor to Placements Jean Paul Tanguay Ltee, St. Prime, Quebec, Canada
Continuation-in-part of application Ser. No. 698,764, Jan. 18, 1968, now Patent No. 3,500,882. This application Aug. 22, 1968, Ser. No. 754,606
Int. Cl. B27b *11/12, 31/00*
U.S. Cl. 143—46F **3 Claims**

An apparatus for cutting trees stems into logs comprising a horizontal conveyor transporting the stems, a first rotary saw for cutting the stems into a first set of logs having twice their final length, an upwardly sloping conveyor for lifting the said first set of logs and a second rotary saw for cutting the first logs in half while the logs are raised. A table for discharging

logs from the horizontal conveyor to the upwardly sloping conveyor comprises a sweeping blade extending longitudinally of the transfer table and a hydraulic jack is used for moving the blade laterally across the table to move the logs thereon on the upwardly sloping conveyor. An apron is



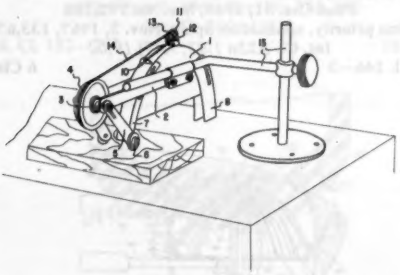
pivotally connected along one edge thereof to the discharge end of the transfer table and is downwardly inclined towards the sloping conveyor, springs biasing the apron upwardly and chains limiting the upward movement of the apron under the bias of the springs.

3,580,307

PROTECTION DEVICE FOR A CIRCULAR CUTTING SAW

Nicolae Minetos, Bucharest, Romania, assignor to Institutul De Cercetari Stiintifice Pentru Protectia Muncii, Bucharest, Romania

Filed Dec. 12, 1968, Ser. No. 783,195
Claims priority, application Romania, Dec. 12, 1967, 55,314
Int. Cl. B27g *19/02*
U.S. Cl. 143—159 **10 Claims**



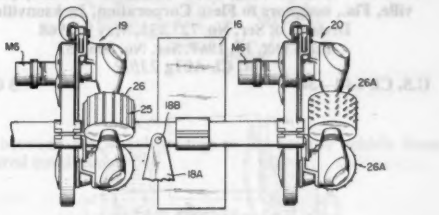
Safety device for use with a circular cutting saw in which a support means is provided forwardly of the saw with respect to the direction in which a workpiece is fed thereto. A pulley means is rotatably mounted on the support means forwardly of the saw and feeler is rotatable connected to the pulley means and extends forwardly of the saw into the path of a workpiece being fed thereto. A guard means connected to the support means covers the saw and includes a slideable guard member which is movable into and out of a safety position covering the forward edge of the saw. Cable means connects the pulley means to the slideable guard member. Thus, when the feeler means is contacted by a workpiece being fed to the saw and is caused to rotate toward the saw the pulley means is rotated causing the cable means to move the slideable guard member out of its safety position to an extent which is a function of the angle through which the feeler means is rotated by the workpiece being moved toward the saw.

3,580,308

TREE PROCESSING APPARATUS WITH FEED ROLLS

Douglas D. Hamilton, Montreal, Canada, assignor to Canadian International Paper Company, Montreal, Quebec; Quebec North Shore Paper Company, Montreal and St. Ann Abitibi Paper Ltd., Beaupre, Canada, fractional part interest to each

Filed May 18, 1967, Ser. No. 639,536
Claims priority, application Canada, May 20, 1966, 960,902
Int. Cl. B27c *1/12, 9/00;* **B27l** *1/00, 11/00*
U.S. Cl. 144—3 **15 Claims**



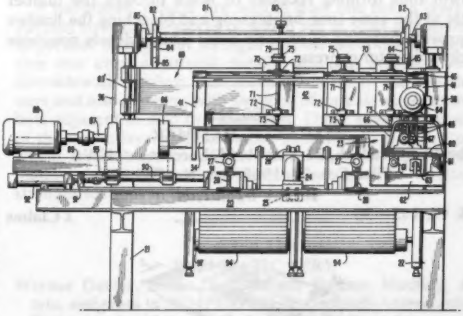
A device for propelling trees or the like along a selected path through one or more processing units, such device consisting of three or more driven rollers mounted on the free ends of respective ones of a plurality of pivotally mounted arms having the free ends movable toward and away from said path to respectively bring the rollers into and out of engagement with a tree located in the path. The rollers are disposed in a generally triangular arrangement and each roller has an outer peripheral surface for tractive engagement with the tree, such tractive surface consisting of an undulated surface provided by a series of cleats extending preferably in a direction perpendicular to the feed path. The cleats permit a tree to shift laterally with respect to the feed path. The cleats permit a tree to shift laterally with respect to the feed path while being fed through the processing units thereby facilitating maintaining the tree in alignment with the feed path.

3,580,309

MACHINE FOR PROCESSING WHEELBARROW HANDLES

Eli Hochstetler, Star Route, Millersburg, Ohio

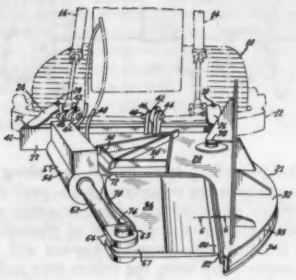
Filed Feb. 3, 1969, Ser. No. 795,818
Int. Cl. B27m *3/16;* **B27c** *5/06*
U.S. Cl. 144—11 **8 Claims**



An apparatus which during a continuous repetitive cycle delivers pieces of lumber, one at a time, to a supporting and clamping means. Each lumber piece in succession is shifted laterally during the supporting and clamping step to a work station where it is firmly held. During the shifting to the work station, each lumber piece is properly positioned longitudinally. While at the work station, plural right-angular

drilling means and a handle-shaping means are simultaneously activated to produce true openings transversely through each lumber piece while one end of the piece is being shaped into a handle. Some of the openings are formed at right angles to other openings. The drilling and shaping means are retracted and each handle is released onto a conveyor means for delivery to a coacting sander for the shaped handle portion.

3,580,310
TREE-SHEAR DEVICE WITH BLADE
Edward V. Frankenberg, and Norman N. Griffith, Jacksonville, Fla., assignors to Fleco Corporation, Jacksonville, Fla.
Division of Ser. No. 727,853, May 9, 1968
Filed Oct. 16, 1969, Ser. No. 866,951
Int. Cl. A01g *23/02*
U.S. Cl. 144—34 **3 Claims**

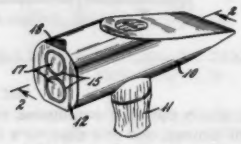


An improved tree-shear device having a pivotally mounted cutting blade powered by a cylinder and piston on which the rearward edge of the cutting blade is of a predetermined configuration to minimize the space between such rearward edge and the cylinder and piston disposed adjacent thereto during movement of the blade during its entire travel between its open and closed positions.

3,580,311
PROCESS FOR TREATING WOOD
Edward L. Fox, Jr., Fort Lauderdale, Fla., assignor to Canadian Cedar Inc.
Filed Oct. 16, 1968, Ser. No. 768,156
Int. Cl. B27k *5/00*
U.S. Cl. 144—309 **7 Claims**
0000

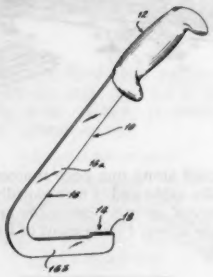
A wood product for use as interior or exterior paneling formed by sandblasting cedar lumber employing a composition of silica and anhydrous oxalic acid for removing fungus growth thus forming recesses or holes through the lumber while at the same time brightening and bleaching the lumber to provide paneling of uniform color which closely simulates pecky tidewater cypress.

3,580,312
MAGNETIC HAMMER
Robert Lay Hallock, 32 Vine Road, Larchmont, N.Y.
Filed Feb. 28, 1968, Ser. No. 709,076
Int. Cl. B25d *1/04*
U.S. Cl. 145—30 **2 Claims**



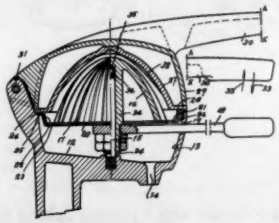
A hammer having a head of ferrous or other material with a striking face, at least one chamber at right angles to its striking face, with a permanent magnet in each chamber, and a hardened cap or end closure in each of said chambers in a manner to seal the magnet within the chamber and at the same time form a part of the striking face of the hammer.

3,580,313
SURGICAL INSTRUMENT
Charles Allen McKnight, 2914 Painted Valley Drive, Little Rock, Ark.
Filed Jan. 7, 1969, Ser. No. 789,474
Int. Cl. B25c *3/00*
U.S. Cl. 145—46 **13 Claims**



A surgical instrument including particularly a stapling-type instrument for attaching or anchoring fleshy parts of the body to adjacent bone structure including means to facilitate such attachments in areas of the body that are relatively inaccessible and difficult to operate in.

3,580,314
JUICE EXTRACTOR
Juan E. Besora, Avda. del Generalisimo, Franco No. 614—30 la, Barcelona, Spain
Filed Oct. 31, 1968, Ser. No. 772,180
Claims priority, application Spain, Nov. 3, 1967, 133,678
Int. Cl. A23n *1/02*; A47j *19/02*
U.S. Cl. 146—3 **6 Claims**



A juice extractor for citrus fruits and the like has a receptacle the upper side of which is open. A pulping member in form of an inverted bowl is mounted for rotation in the receptacle projecting upwardly beyond the open upper side thereof. The outer surface of the pulping member is provided with ribs. A handle is provided on the pulping member and extends outwardly through a slot in the circumferential wall of the receptacle so that the pulping member may be turned about the axis of the receptacle. A cap is pivoted to the receptacle and may be moved to a closed position in which it overlies the pulping member so as to compress a piece of fruit between the latter and the inside of the cap so that, when the pulping member is turned by means of the handle, the fruit will be pulped and juice extracted.

3,580,315
COMMINUTING MACHINE

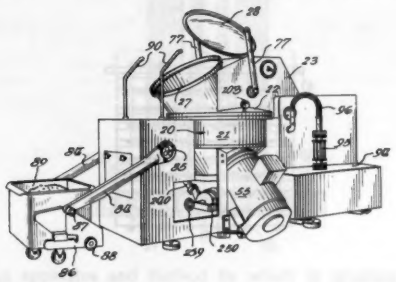
Carl Schnell, Winterbach near Schorndorf-Wurttemberg, Germany, assignor to The Griffith Laboratories, Inc., Chicago, Ill.

Continuation-in-part of application Ser. No. 532,602, Mar. 8, 1966, now abandoned. This application Feb. 3, 1969, Ser. No. 795,912

Claims priority, applications Germany, Mar. 8, 1968, Mar. 11, 1965, June 1, 1965, Sept. 29, 1965, P 16 32 883.9, SCH 36,675, SCH 37,216, P 15 32 007.7

Int. Cl. B02c *18/06*

U.S. Cl. 146—79 30 Claims



Comminuting apparatus for comminuting or precomminuting materials, particularly food products, under continuous circulating conditions and, preferably, under deaerating conditions. This apparatus can be used effectively in conjunction or combination with additional comminuting apparatus which more finely comminutes materials previously comminuted or precomminuted in said first-mentioned comminuting apparatus.

3,580,316
REINFORCED TIRE

George V. Mastrapas, 660 Virginia Park, Detroit, Mich.

Filed Jan. 8, 1969, Ser. No. 789,792

Int. Cl. B60c *19/12*

U.S. Cl. 152—200 18 Claims

This invention relates to a reinforced tire. A thin steel sheet is wrapped radially interior to the tread. Rivets fixed to the sheet extend radially outward therefrom into the tread rubber. An array of indentations is provided on the sheet. Rubber adhering glue fixes the sheet to the tread rubber and more radially interior tire rubber. Brackets integral with the sheet and angularly displaced with respect thereto provide additional securing means between the sheet and the rubber of the tire.

3,580,317
DEVICE FOR EXTRACTING A MIRED MOTOR VEHICLE

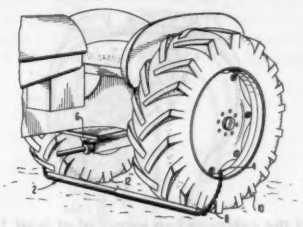
Clifford McHargue, P. O. Box 28, Lily, Ky.

Filed Dec. 19, 1968, Ser. No. 785,196

Int. Cl. B62d *57/00*

U.S. Cl. 152—208 11 Claims

A device for removing a vehicle from a mired condition includes an elongated bar with an adjustable length. Connectors at the opposite ends of the bar are attached to spaced apart wheels or lugs of a vehicle. Powered movement of the wheels or lugs will move the bar against an undisturbed surface between the wheels or lugs to elevate the vehicle from its mired condition.



3,580,318
PNEUMATIC VEHICLE TIRE

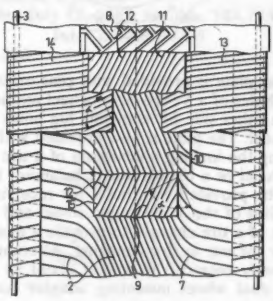
Hans Menell, Ahlem, and Walter Scheithauer, Meyenfeld, Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany

Filed Dec. 2, 1968, Ser. No. 780,424

Claims priority, application Germany, Nov. 30, 1967, P 16 05 639.6

Int. Cl. B60c *9/02, 9/18*

U.S. Cl. 152—354 8 Claims



A pneumatic vehicle tire with at least one zenith layer, the parallel strength members of which are at least approximately parallel to adjacent strength member sections of the carcass and cross-additional parallel strength members in the tire sidewalls leading from the bead cores to the tire shoulders and also crossing with sections of carcass strength members adjacent to said tire shoulders. Those strength members of the zenith layers which extend substantially parallel to adjacent thread sections of the carcass form at least approximately right angles with the marginal areas of additional strength sections in the tire sidewalls.

3,580,319
PNEUMATIC TYRE

Werner Gorter, Baden, and Johann Hauser, Modling, Austria, assignors to SEMPERIT Osterreichisch-Amerikanische Gammiwerke Aktiengesellschaft, Vienna, Austria

Filed Apr. 11, 1969, Ser. No. 815,387

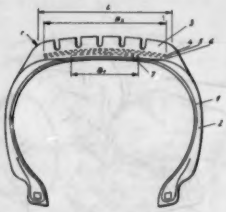
Claims priority, application Austria, Apr. 18, 1968, A3770/68

Int. Cl. B60c *9/04*

U.S. Cl. 152—361 4 Claims

A pneumatic tyre having reinforcements inserts of a maximum width of less than 95 percent (preferably 85—90 percent) or more than 105 percent of the tread with and in

which the rubber sidewall on at least one side, and preferably both sides, is extended between the edge of the reinforcing

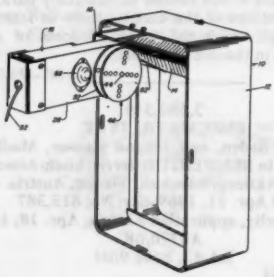


inserts and the carcass to an extent of at least 10 percent of the maximum width of the inserts.

3,580,320
ADAPTERS FOR USE IN TIRE CHANGING AND WHEEL BALANCING
Warren A. Roberts, 514 Clinton St., Redwood City, Calif.
Filed Sept. 30, 1968, Ser. No. 763,771
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.24 **15 Claims**

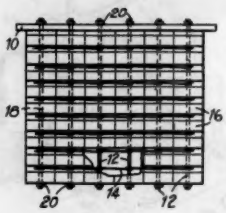
A circular plate is provided with pins on one side for engaging lug holes of a Volkswagon wheel and is provided with pins on the other side for engaging lug holes of an eight-lug Pontiac wheel. The plate is also provided with a central hole for receiving the locking mechanism of a tire changer or the balancing head of a bubble wheel balancer. In addition, the plate may be provided with holes for receiving the hub cap retaining clips of the Volkswagon wheel and the spring-stop mechanism of a tire changer to provide a dual wheel mounting adapter for use in tire changing. Alternatively, the plate may be evenly balanced in weight about its central hole to provide a dual wheel mounting adapter for use in wheel balancing.

3,580,321
SMOKE DAMPER
James R. Root, Independence, Mo., assignor to Ruskin Manufacturing Company, Grandview, Mo.
Filed Apr. 25, 1969, Ser. No. 819,203
Int. Cl. E05f *15/20;* **E06b** *9/204*
U.S. Cl. 160—1 **10 Claims**



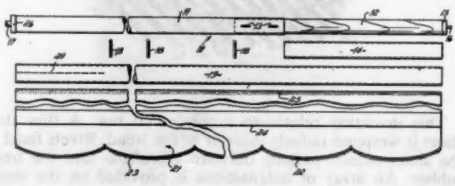
A damper for automatically sealing building passages against the flow of fluids such as smoke. The damper comprises a plurality of blades held in a standby position by an energized motor and which automatically move to the closed position when the electrical energy to the motor is interrupted. Axial shifting of the motor responsive to electromagnetic forces effects the holding and release of the blade assembly.

3,580,322
FLEXIBLE REFRACTORY CURTAIN
David B. Herbert, Holden, and Ronald N. Barney, Westboro, Mass., assignors to Norton Company, Worcester, Mass.
Filed Apr. 14, 1969, Ser. No. 815,732
Int. Cl. E06b *9/24*
U.S. Cl. 160—231 **3 Claims**



A flexible refractory curtain or covering is disclosed which is made up of an essentially horizontal supporting rod or tube to which is attached a network of flexible vertical and horizontal wires or cables to which are affixed segments made from a refractory material like silicon carbide, alumina or the like. The segments are so shaped and assembled on the flexible network that when the curtain is hanging in a vertical position the segments mate to form an effectively solid wall which functions as a barrier to the passage of heat and gases.

3,580,323
WINDOW SHADE
Robert C. Gossling, Cincinnati, Ohio, and George Armstrong, Sydney, N.S.W., Australia, assignors to Clopay Corporation, Cincinnati, Ohio, by said Gossling
Filed Dec. 4, 1969, Ser. No. 882,055
Int. Cl. A47g *5/02;* **A47h** *1/022*
U.S. Cl. 160—263 **6 Claims**



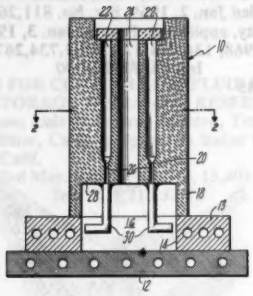
A window shade having a transversely symmetrical design. By a "transversely symmetrical design" is meant a design that extends across the shade either in the form of a scalloped or otherwise configurated lower edge, or in the form of an overall print so that the two edgewise areas of the design are the same. The disclosure is concerned primarily with a window shade roller of the type set forth that is adapted to be shortened quickly and easily by first cutting and removing equal widths of shade material from both ends of the roller, in order to preserve the symmetry of design, and second, telescoping the roller to bring the respective ends of the roller into proper relationship with the newly cut edges of the shade.

3,580,324

DOUBLE-ORIENTED SINGLE CRYSTAL CASTINGS

Stephen M. Copley, Madison; Anthony F. Giamei, Middletown; Merton F. Hornbecker, Woodbury, and Bernard H. Kear, Madison, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 13, 1969, Ser. No. 806,823
Int. Cl. B22d 25/06
U.S. Cl. 164—60 10 Claims



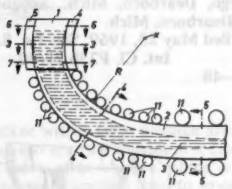
An apparatus and method by which to produce single crystal parts in which the orientation of the dendrite growth in two planes at right angles to one another is described. In effect this produces an orientation in all three right angle planes of the cast article.

3,580,325

CONTINUOUS CASTING MACHINE FOR SLABS

Hans Schrewe, Duisburg-Ungelsheim, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Continuation-in-part of application Ser. No. 550,713, May 17, 1966, now abandoned. This application Apr. 3, 1969, Ser. No. 813,171
Claims priority, application Germany, May 17, 1965 M65266
Int. Cl. B22d 11/00
U.S. Cl. 164—82 7 Claims



A continuous casting machine for slabs includes a mold that has a mold passage of trapezoidal cross section with the base surface on the side of the center of curvature of the casting and the opposite surface being symmetrically arranged about the central plane of the mold passage.

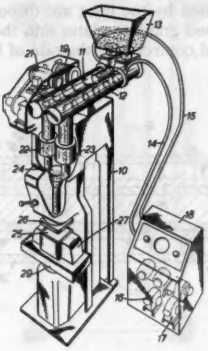
3,580,326

APPARATUS FOR MAKING FOUNDRY CORES AND MOULDS

Albert Edwards, Ailsworth, near Peterborough, England, assignor to British Cast Iron Research Association, Birmingham, England

Filed Mar. 26, 1969, Ser. No. 810,772
Claims priority, application Great Britain, Mar. 27, 1968, 14,654/68
Int. Cl. B22c 15/24
U.S. Cl. 164—200 5 Claims

In the production of sand-based foundry cores and mould bodies by a substantially cold curing process employing a resin and a catalyst, charges of sand containing resin and sand containing catalyst are prepared in separate driven mixer-feeder units forming part of apparatus incorporating separate chambers into which the charges from the mixer-



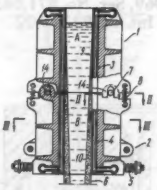
feeder units are fed and from which they are blown into a common reaction chamber, the mixture then being blown from that chamber into a core-box or mould.

3,580,327

CONTINUOUS CASTING MOLD

Georgy Lukich Khimich; Vitaly Maximovich Niskovskikh, Sverdlovsk; Alexei Ivanovich Varaxin, Moscow; Evgeny Jukhimovich Gelfenbein; Leonid Alexandrovich Bykov; Anatoly Ivanovich Litvinov, and Stanislav Evgenievich Karlinsky, Sverdlovsk, U.S.S.R.

Filed July 15, 1968, Ser. No. 744,773
Int. Cl. B22d 11/06
U.S. Cl. 164—280 3 Claims



A continuous casting mold which has upper and lower portions made up of sidewalls, the sidewalls of the upper portion being fixed and defining a predetermined ingot path cross section, while the sidewalls of the lower portion are mutually movable. Fixing members, made up of rotary eccentric cams, connecting the vertically adjacent upper and lower sidewalls, and biasing means acting on the lower portion sidewalls to bias them radially inwardly to conform to the ingot shrinkage. Furthermore, second biasing means acting substantially in the direction of the ingot axis are provided on the sidewalls of both upper and lower portions to preclude a gap from occurring at the junction of the vertically adjacent upper and lower portions.

3,580,328

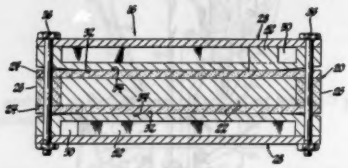
MOLD FOR IMPROVED CONTROL OF HEAT TRANSFER IN CASTING PLATE OR STRIP PRODUCTS

Robert E. Eppich, Southfield, and Fred J. Webbere, Orchard Lake, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 12, 1969, Ser. No. 823,706
Int. Cl. B22d 11/00
U.S. Cl. 164—283 5 Claims

An open-ended mold is disclosed for continuously casting metal plate or strip, the mold having a graphite casting cavity

liner formed of two parallel plates separated at two of their opposing edges with spacer members so as to define an open ended cavity of substantially rectangular cross section, and two cooled metal jackets each tightly clamped against a liner plate. The two principal directions of heat transfer from the mold cavity defined by the liner are through the respective oppositely disposed graphite plates into the adjacent cooled jackets. Improved control over the rate of heat transfer from



the mold cavity is obtained by providing a slight convex curvature or crown of suitable height on either the internal surfaces of each cooled jacket or the adjacent external surfaces of the liner plates so that when a crowned surface is tightly clamped against an adjacent flat surface positive control is maintained over the area of contact between the surfaces during casting despite the inherent tendency of the graphite liners to bow to the mold cavity when in contact with hot metal due to thermal expansion.

3,580,329

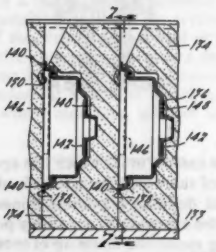
PLURAL MOLD CASTING APPARATUS

Russell W. Taccone, Erie, Pa., assignor to Kelsey-Hayes Company

Original application Sept. 18, 1967, Ser. No. 674,044, now Patent No. 3,517,728. Divided and this application Sept. 4, 1969, Ser. No. 871,043

Int. Cl. B22c 9/22

U.S. Cl. 164—366 **2 Claims**



An apparatus and method for making castings which consist of successively forming a drag of a compacted green sand mixture having a cavity therein of a preselected pattern and disposed in an open ended flask, successively transferring the flasks by a transfer device into alignment with the inlet end of a casting tube adapted to guidably support a plurality of the molds disposed in face-to-face abutting relationship and pressing the mold from the flash in a manner to effect a trimming of the periphery of the mold to correspond with and to provide a sliding sealing fit with the inner surface of the casting tube, pouring molten metal into the cavities of the molds while disposed in stacked face-to-face abutting relationship within the casting tube and thereafter successively ejecting and transferring the filled molds to an elongated cooling tube provided with cooling means for accelerating the removal of heat from the molds. In some aspects of the apparatus and method comprising the present invention, a subatmospheric pressure is applied to the periphery of the molds while in the casting tube for removing gaseous products formed during the casting operation. An improved mold is also described which consists of a mass of compacted green sand having a core of a thin-walled shell of bonded sand disposed in overlying relationship on one face thereof providing porosity and precision in castings heretofore unobtainable.

3,580,330

GEOTHERMAL SYSTEM

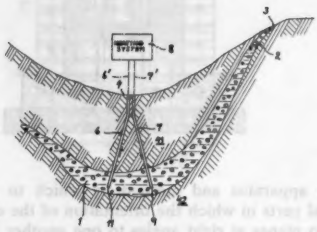
Pierre Marcel Maugis, Suresnes, France, assignor to Societe Technique, De Geothermie, Paris, France

Filed Jan. 2, 1969, Ser. No. 811,266

Claims priority, application France, Jan. 3, 1968, Nov. 13, 1968, 134,778;175,285;1,734,267

Int. Cl. F28f 19/00

U.S. Cl. 165—45 **6 Claims**



Hot geothermal water in liquid or vapor form rises, with the aid of a pump if necessary, in an insulated well and passes through a heat exchanger where its heat is utilized for urban heating. Subsequently, the spent water is reinjected through another well into the original geothermal body of water at a point sufficiently remote from the point at which it was extracted to prevent the cooled water from substantially lowering the temperature of the extracted water while ensuring a substantially steady hydrostatic pressure in the body of water.

3,580,331

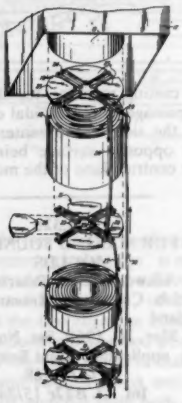
APPARATUS FOR ANNEALING WITH ACCELERATED COOLING

William Wargo, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 23, 1969, Ser. No. 839,761

Int. Cl. F25b 29/00

U.S. Cl. 165—48 **11 Claims**



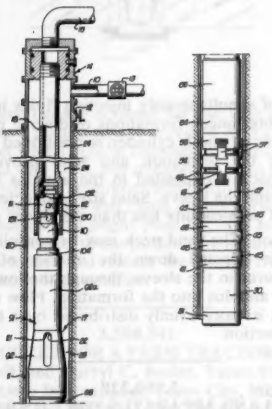
Apparatus for cooling stacked coils of steel sheet from an

annealing temperature at an accelerated rate. A hood is provided for sealing the coils from the oxidizing ambient atmosphere during the period when the coils are heated. Within the hood means, cooling separator structures are placed in contact with the planar coil surfaces. These separators include weight bearing members used to support the coils and provide space for closed fluid conduits. These conduits are interposed between, under and atop the coils in intimate contact with the planar surfaces of the coils. This arrangement provides for conductive heat transfer from the coils to coolant circulated in the fluid conduits without causing oxidation of the coils.

3,580,332
APPARATUS FOR CONTROLLING FLUID FLOW FROM GAS STORAGE WELLS AND RESERVOIRS

Michael R. Dean; Luis F. Castro, Houston, Tex., and John V. Salerni, Whittier, Calif., assignors to Baker Oil Tools, Inc., Commerce, Calif.

Filed Mar. 2, 1970, Ser. No. 15,403
Int. Cl. E21b *33/12*
U.S. Cl. 166—184 **23 Claims**



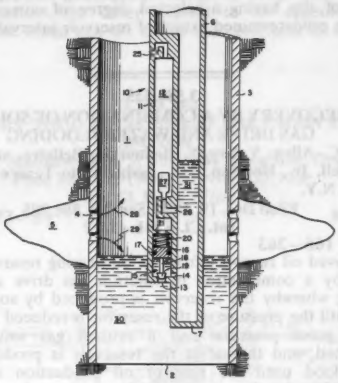
A retrievable packer with a large passage area and control valve connected thereto are run and set in a cased well bore. A plug is set in the valve, after which a tubing is connected to the plug and fluid pressure applied thereto to open the valve so that gas from the well or reservoir can flow through the packer and opened valve into the tubing-casing annulus and into a gas delivery line at the top of the well bore. The valve is tapered to provide a greater annular area between it and the well casing to allow unrestricted flow of gas from the well at a very high rate. In the event of damage to the surface equipment, the well pressure automatically closes the control valve. The valve can be closed whenever desired and the tubing string removed, after which the plug and control valve and packer are removable from the well casing through use of wireline equipment, and without the necessity for "killing" the well.

3,580,333
WELL LIQUID REMOVAL DEVICE

Bobby L. Douglas, Ennis, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sept. 11, 1969, Ser. No. 857,242
Int. Cl. E21b *33/00*
U.S. Cl. 166—224 **8 Claims**

A device for removing liquid from a well bore which utilizes two valve means. One valve admits liquid to the tubing

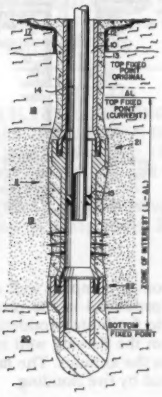


and the other valve admits gas to the tubing to lift liquid in the tubing to the earth's surface.

3,580,334
METHOD FOR PREVENTING DEFORMATION IN A WELL CASING

Leo P. Broussard, New Orleans, La.; Leon L. Dickson, Jr., and Wilhelmus J. G. Gardenier, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Filed Jan. 22, 1970, Ser. No. 5,078
Int. Cl. E21b *17/08;, 49/02;* G01n *3/10*
U.S. Cl. 166—250 **7 Claims**



A method for preventing deformation of the casing of a well bore hole extending into a reservoir interval within a subterranean hydrocarbon-bearing earth formation wherein such deformation is caused by the compaction of the reservoir interval in which unconsolidated sand therein compacts when the fluid pressure of the interval is reduced. A core sample is extracted from the interval containing a substantially undisturbed portion of unconsolidated sand typical of that contained in the interval. The extent of vertical compressibility of the cored sample is measured relative to its orientation within the reservoir interval and its lateral confinement in the configuration it exhibits under an isostatic compressive force equaling that existing within the interval. The vertical extent of the sand contained within the interval and the extent of reservoir interval compression that would result from a vertical compression of the sand contained in the reservoir interval by an amount corresponding to the

measured compressibility of the core sample are determined. The portion of the well casing to be disposed against the interval is equipped with slip couplings adapted to provide an extent of slip having a selected degree of correspondence with the predetermined extent of reservoir interval compressibility.

3,580,335

OIL RECOVERY BY A COMBINATION OF SOLUTION GAS DRIVE AND WATERFLOODING

Joseph C. Allen; Valery N. Bednarski, Bellaire, and Russell W. Hall, Jr., Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 19, 1969, Ser. No. 886,785
Int. Cl. E21b *43/22*
U.S. Cl. 166—263 **4 Claims**

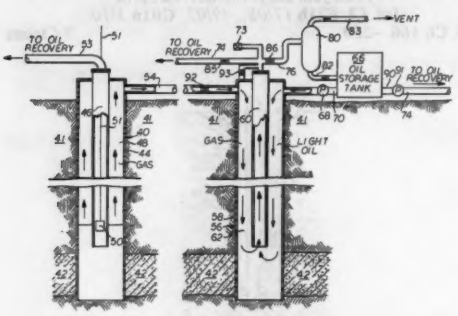
Improved oil recovery from an oil-bearing reservoir is obtained by a combination of solution gas drive and water flooding whereby the reservoir is produced by solution gas drive until the pressure of the reservoir is reduced below the bubble point pressure and a critical gas saturation is established, and thereafter the reservoir is produced by a water flood until the rate of oil production reaches a predetermined value or termination point, whereafter the cycle is repeated.

3,580,336

PRODUCTION OF OIL FROM A PUMPING WELL AND A FLOWING WELL

Robert F. Meldau, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Jan. 6, 1969, Ser. No. 789,163
Int. Cl. E21b *43/25*; F04f *1/20*
U.S. Cl. 166—267 **1 Claim**



Production of oil from a pumping well and a flowing well wherein gas which is produced in the pumping well is conveyed to and utilized to facilitate production of oil from the flowing well. Flow from the flowing well may be initiated by pumping a light oil into the annulus. The method may be utilized with wells produced by fire flooding.

3,580,337

METHOD FOR STABILIZING THE MOBILITY OF POLYACRYLAMIDE SOLUTIONS FLOWING THROUGH POROUS MEDIA

William B. Gogarty, and Richard W. McAtee, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Apr. 14, 1969, Ser. No. 816,047
Int. Cl. E21b *43/22*
U.S. Cl. 166—273 **27 Claims**

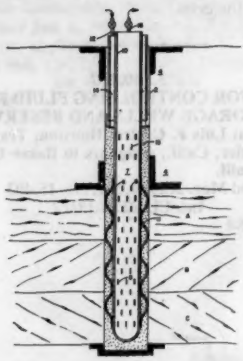
Oil saturations are decreased by flooding the oil-bearing subterranean formation with an aqueous solution of relatively low salt content containing a high molecular weight partially hydrolyzed polyacrylamide having incorporated therein from about 1 to about 50 ppm of a divalent cation of a water-soluble salt. The divalent cation stabilizes the polyacrylamide in the aqueous solution with regard to mechanical degradation and such enables a bank of the aqueous solution to maintain its mobility while traveling through the formation.

3,580,338

METHOD FOR INJECTING FLUIDS INTO UNDERGROUND FORMATIONS HAVING DIFFERING PERMEABILITIES

Derry D. Sparlin, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Aug. 6, 1969, Ser. No. 847,897
Int. Cl. E21b *43/04*
U.S. Cl. 166—276 **4 Claims**



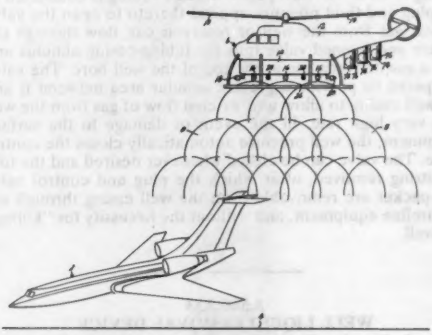
A method of simultaneously injecting fluids into adjacent sections of subterranean formations of diverse permeability. A slotted sleeve or mesh cylinder is positioned in the wellbore opposite the formation and sand providing a low permeability pack is deposited in the annulus between the wellbore wall and the sleeve. Sand size is selected to provide a sand pack of permeability less than the lowest permeability of the formation. The sand pack may be consolidated with a resin. Fluid is injected down the interior of the sleeve, through apertures in the sleeve, through the low permeability, sand-filled annulus into the formation. Flow of fluids into the formation is more evenly distributed over the length of the wellbore section.

3,580,339

METHOD AND APPARATUS FOR COMBATTING AIRCRAFT FIRES

David Nance, P.O. Box 16291, Phoenix, Ariz.

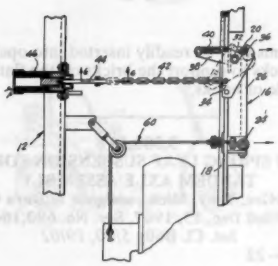
Filed Jan. 30, 1969, Ser. No. 795,171
Int. Cl. A62c *3/06*
U.S. Cl. 169—2 **5 Claims**



A method of combatting aircraft fires consisting of hovering an emergency aircraft, usually a helicopter, above an aircraft which has crash-landed or is in distress and is about to crashland, said helicopter thereby being positioned im-

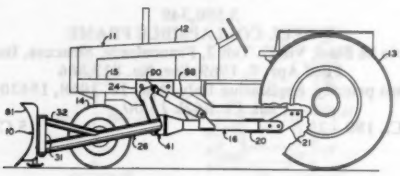
mediately above the aircraft either during or immediately after the crash landing, and being specially equipped to emit clouds of flame-smothering vapors to envelop the aircraft in trouble, whereby either to prevent fires or to immediately extinguish fires which may start, thereby to save large numbers of lives and incalculable amounts of property damage, and the apparatus for performing said method.

3,580,340
ELECTRONIC MARKER ACTUATOR
David N. Brown, 1426 Erie St., Ottawa, Ill.
Filed Oct. 25, 1968, Ser. No. 770,740
Int. Cl. A01b *69/02*
U.S. Cl. 172—126 **3 Claims**



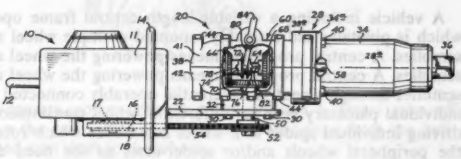
An electronic marker actuator for use with an agricultural device such as a planter that is provided with a pivotally connected marker which may be disposed in a substantially vertical position at one time, and released so as to be disposed in a horizontal position at another time, with pushbutton means disposed on the planter and catch means normally maintaining the marker in an upright position, and solenoid means operatively connected to the pushbutton means so as to actuate the catch means and release the marker from its upright position to a horizontal position.

3,580,341
DOZER FOR A FARM TRACTOR
Kyle E. Terrell, and Darryl C. Rester, Yazoo City, Miss., assignors to Amco International, Yazoo City, Miss.
Filed Aug. 18, 1967, Ser. No. 661,607
Int. Cl. E02f *3/76*
U.S. Cl. 172—805 **15 Claims**



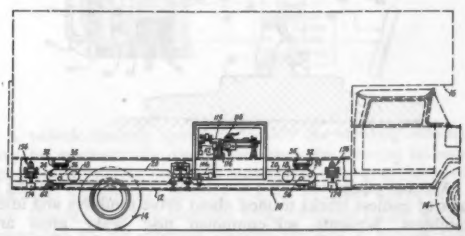
A dozer for a farm tractor which includes a blade pivotally mounted at one end to one leg of a substantially U-shaped blade frame, and an extension arm selectively interconnected pivotally between the other blade end and the other leg of the blade frame to pivot and angularly dispose the blade toward one side of the tractor. The extension arm is selectively located in a reserve position between the blade and blade frame when the arm is not in use and when the said other blade end is attached to the said other leg. The extension arm is pivotally attached at one of a pair of longitudinally spaced, front and rear connection points, and the said other blade end and said other leg are attached at the other connection point when the extension arm is selectively pivoted behind the blade in the reserve position. A bearing means, pivotally connecting the bight of the blade frame to the chassis frame, includes a journal carried by a support plate at each side of the chassis frame, the journals pivotally mounting the bight. Pivot means mounts one journal to its associated support plate about a pivot axis, while means movably mount the other journal to its support plate, whereby the blade can tilt about the pivot axis of said one journal.

3,580,342
ROTARY TOOL ATTACHMENT FOR CHAIN SAW MOTOR
William F. Matthews, Rte. 2, Box 1061, Coos Bay, Oreg.
Filed May 12, 1969, Ser. No. 823,912
Int. Cl. B27b *17/00*
U.S. Cl. 173—29 **8 Claims**



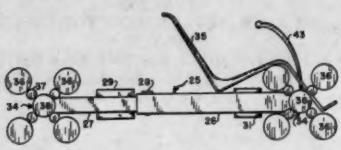
A rotary tool attachment for a chain saw motor drive unit, where such unit includes a motor housing and a motor-driven shaft protruding to one side of the housing and mounting a chain saw sprocket. The attachment comprises an elongated support adapted to be secured to the housing with such normal to the driven shaft of the drive unit. A tool-driving sprocket adjacent the end of the support remote from the driven shaft and in the plane of the chain saw sprocket is mounted on a power transmission input shaft which generally parallels the motor-driven shaft. The input shaft extends into a tool-housing assembly mounted on the remote end of the support and is connected through a power-transmitting means with right-angle drive train to a tool-driving head journaled on the tool housing assembly.

3,580,343
TRUCK WITH BUILT-IN WEIGHING MECHANISM AND LOAD HOLD-DOWN DEVICE
Dean M. Hogue, West Sacramento (10569 Dolcetto Drive, Rancho Cordova, Calif. 95670), and Carl M. Bender, 6007 Mack Road, Sacramento, Calif.
Filed Oct. 18, 1968, Ser. No. 768,787
Int. Cl. G01g *19/08, 23/02*
U.S. Cl. 177—136 **7 Claims**



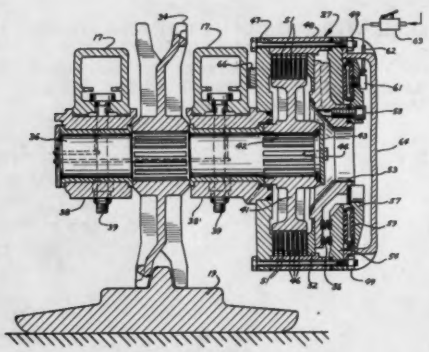
A truck chassis frame is provided with means for supporting a truck body thereabove, which means is utilized for operating a mechanism connected to a scale for weighing the body of the truck and the contents thereof. Before the truck operates in transit, the operator puts into operation means for fixing the truck body with respect to the chassis frame to prevent any movement of the truck body relative to the chassis frame during transit.

3,580,344
STAIR-NEGOTIATING WHEEL CHAIR OR AN IRREGULAR-TERRAIN-NEGOTIATING VEHICLE
Johnnie E. Floyd, 2609 E. Side Drive, Austin, Tex.
Filed Dec. 24, 1968, Ser. No. 786,674
Int. Cl. B62d *57/02*
U.S. Cl. 180—8-A **11 Claims**



A vehicle including a variable-length central frame upon which is pivotally and rotatably mounted multiple wheel assemblies. A central propelling means powering the wheel assemblies. A central propelling means powering the wheel assemblies through a central differential operably connected to individual planetary gear set differential wheel transmissions driving individual spider arm wheel assemblies which rotate the peripheral wheels and/or spider-arms as the need demands to climb or descend stairs, negotiate uneven terrain, and execute various maneuvers. The operator preselects through a central control a desired maneuver or function. The vehicle senses the most appropriate mechanical function and performs the maneuver by the optimum safe means.

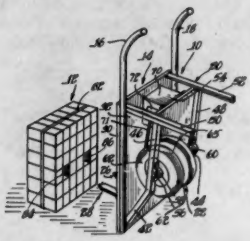
3,580,345
DISC BRAKE FOR TRACK-DRIVEN MACHINE
Archer W. Brown, Minneapolis; James L. Montgomery; Walter A. Beer, St. Paul, and Thomas J. Mero, Inver Grove Heights, Minn., assignors to American Hoist & Derrick Company, St. Paul, Minn.
Filed June 11, 1969, Ser. No. 832,203
Int. Cl. B62d *55/06*
U.S. Cl. 180—9.2 **11 Claims**



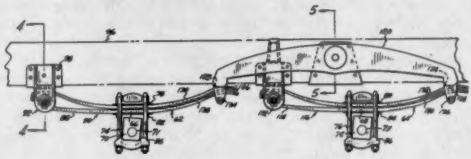
A crane equipped with a crawler travel assembly having a pair of endless tracks trained about drive tumblers and idler tumblers. Separate self-contained disc brake units are drivably connected to the axles attached to the idler tumblers. The brake units have torque arms anchoring the units to the track frame.

3,580,346
TRUCK
Terrence F. McLaren, 5104 W. 105th place, Oak Lawn, Ill.
Filed Apr. 30, 1969, Ser. No. 820,364
Int. Cl. B62d *51/04*; **B62b** *1/06*
U.S. Cl. 180—19 **3 Claims**

A truck which is particularly adapted for use in hauling a bundle of bricks at a construction site. The truck includes a flatbed to which is connected a pair of wheels. The flatbed has a plurality of pairs of spaced apertures, and a pair of cantilever arms is mounted in a selected pair of spaced apertures. The arms may be readily inserted into open spaces in a bundle of bricks to support the bricks on the flatbed for hauling the bundle of bricks.

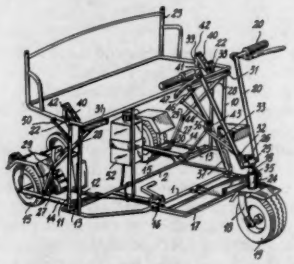


3,580,347
TAPERED SPRING LEAF SUSPENSION FOR DRIVER TANDEM AXLE ASSEMBLY
Donald J. McGee, Troy, Mich., assignor to Dura Corporation
Filed Dec. 13, 1967, Ser. No. 690,164
Int. Cl. B60g *5/00, 19/02*
U.S. Cl. 180—22 **13 Claims**



This specification discloses a suspension for a motor vehicle or trailer. The suspension comprises multiple tapered leaf springs fixed near their centers to an axle. At tareweight, the leaves are separated from each other near their ends. At full load, the leaves are compressed together near their ends. This provides a changing spring rate corresponding to variance of load. The arm of one leaf is rigid to horizontal compression, resisting acceleration and braking loads.

3,580,348
WHEEL COLLAPSIBLE FRAME
Rosario Di Biasi, Via G. Tell 2, Francofonte, Siracusa, Italy
Filed Apr. 7, 1969, Ser. No. 813,866
Claims priority, application Italy, Apr. 18, 1968, 15420A68
Int. Cl. B62k *15/00*
U.S. Cl. 180—25 **5 Claims**



Collapsible frame for wheeled vehicles, comprising a main structure to which rear forks are pivoted and carry wheels, a front footboard carrying a steering wheel, and a seat.

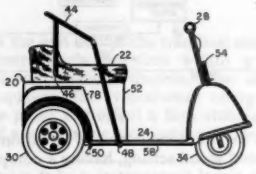
Said forks, footboard and seat are clampable to an open position where the frame is at running conditions and are operable to assume a closed position where the forks and footboard enter the main structure on which the seat can be overturned, in this case the frame occupying a rather reduced volume or space.

3,580,349

PORTABLE MOTORIZED CART

Edward N. Brennan, 9132 Edgewater Drive S. W., Tacoma, Wash., and Brian L. Brennan, 11616 Gorham, Los Angeles, Calif.

Filed Apr. 17, 1969, Ser. No. 816,892
Int. Cl. B62k *15/00*
U.S. Cl. 180—27 **4 Claims**



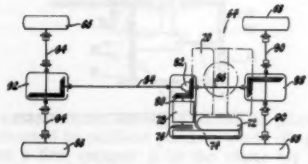
A portable motorized cart useful for transporting a person and his golf culbs over a golf course, a person over a sand dune or beach, and/or a person around a industrial area, etc. The cart is conveniently adjusted to a smaller overall size for its over road transportation, for example, in the trunk space of an automobile. Compaction of the cart for such storage and travel involves tilting of a foot rest or floor, telescoping of frame menbers, tilting of steering and control means, and, as necessary, removal of a seat and a golf club rack.

3,580,350

VEHICLE POWER UNIT AND DRIVE TRAIN

Zora Arkus-Duntov, Grosse Pointe Shores, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 23, 1969, Ser. No. 793,311
Int. Cl. B60k *5/04, 17/34*
U.S. Cl. 180—44 **7 Claims**



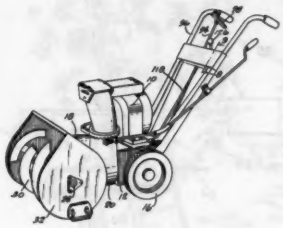
Arrangements for a vehicle power unit and drive train including a transversely mounted engine having a transmission mounted along one side thereof and a differential mounted along the other side. Power transfer means connect one end of the engine and transmission and may include a fluid coupling or torque converter, drive chain and mechanical clutch. A drive shaft passing under the engine crankshaft and preferably through the oil pan member drivably connects the transmission and differential. Alternative four-wheel drive arrangements provide a second drive shaft connected to a second differential with suitable differential or slip permitting drive means between the transmission and the two drive shafts.

3,580,351

SELF-PROPELLED GARDEN TRACTOR VEHICLE

Ignatius J. Mollen, Brillion, Wis., assignor to Ariens Company, Brillion, Wis.

Filed Jan. 7, 1969, Ser. No. 789,555
Int. Cl. B60k *17/28, 25/00*
U.S. Cl. 180—53D **7 Claims**



Separate power-delivery trains actuate a power take off from the crankshaft and a variable ratio drive from the half-speed cam shaft to the wheels.

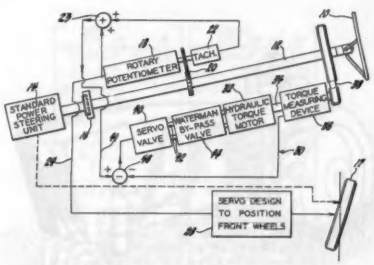
The drive to the wheels is a friction drive normally disengaged and controlled by a "dead man's grip." When disengaged, the driven disc is freely movable between any of its various positions transversely of the driving disc, thereby providing for plural speeds forward and/or reverse, and for neutral. Means prevents axial movement of the driving disc into contact with the driven disc in the neutral position of the latter.

3,580,352

STEERING TORQUE SERVO

Erling Hestad, Pontiac; Thomas E. Ritter, Utica, and Alton G. De Claire, Jr., Grosse Pointe Woods, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 21, 1969, Ser. No. 792,466
Int. Cl. B62d *5/00*
U.S. Cl. 180—79.2 **3 Claims**



A vehicle-steering system in which the steering column may be mechanically disengaged from the steering linkage after which steering control is accomplished by generation of electrical signals representing desired dirigible wheel position. Steering "feel" is provided by a controlled torque motor connected to the steering column through a torsion bar torque sensor.

3,580,353

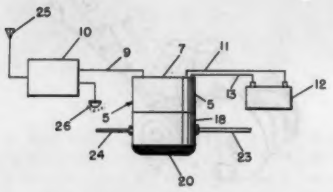
REMOTE CONTROL FOR FUEL LINE SHUT-OFF

Kermith R. Thompson, 7722 Dexter Blvd., Detroit, Mich.

Filed Apr. 12, 1968, Ser. No. 720,900
Int. Cl. B60k *31/00*
U.S. Cl. 180—98 **4 Claims**

This invention consists of a mechanism adapted to be connected into the fuel line of an internal combustion engine of

a vehicle between the fuel tank and the fuel pump, the aforesaid mechanism consisting of a two-piece vertically disposed metal receptacle that has its two sections screwed together on assembly. The uppermost one of the two piece receptacle contains an electric solenoid that is connected to an electric battery and to a signal receiver that receives its impulses from a transmitter located in another vehicle. The solenoid has a spring-loaded plunger that has its lower end extending down through a seal in the bottom of the upper-



most one of the two-piece receptacle and on into openings in the wall of a horizontally disposed Y-shaped tube that is located in the lowermost one of the two-piece receptacle. The side of the lower portion of the plunger has an opening therein through which fuel will flow when this invention is inactive; the lower end of the plunger is adapted to enter an opening in the wall of the angularly disposed portion of the Y-shaped tube. This invention also has a blinking light connected to the aforesaid signal receiver in such a location as to be seen outside the vehicle containing this invention.

3,580,354

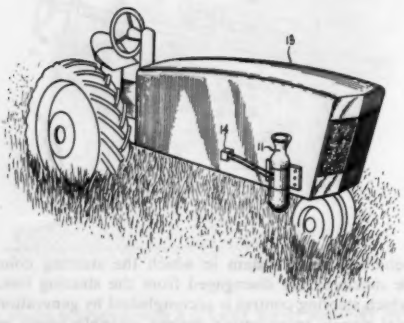
VEHICLE TILT COMPENSATOR

Harlan Douglas Hewitt, 1210 Astor St., Chicago, Ill.

Continuation-in-part of application Ser. No. 665,056, Sept. 1, 1967, now abandoned. This application Jan. 21, 1969, Ser. No. 814,216

Int. Cl. B60r *21/00*

U.S. Cl. 180—104 **6 Claims**



The following abstract is provided in accordance with Rule 72(*b*) and only for the purpose set forth therein.

In the present invention, apparatus is provided for use in combination with a vehicle to prevent the vehicle from overturning or to delay the overturning action long enough to allow the driver to leave the vehicle safely. The apparatus includes thrust producing means activated when the vehicle is inclined beyond the critical balance angle of the vehicle, or when the vehicle reaches some predetermined position in relation to the critical balance angle. The thrust produced is used to return the vehicle toward its normal upright position.

3,580,355

AUTOMATIC SPEED CONTROL APPARATUS FOR AUTOMOTIVE VEHICLES

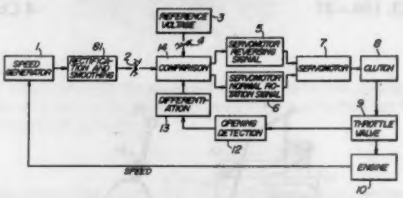
Yasushi Kitano, Osaka, and Kozo Fujita, Kyoto, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 3, 1968, Ser. No. 695,419

Claims priority, application Japan, Jan. 13, 1967, Jan. 13, 1967, Jan. 16, 1967, Feb. 21, 1967, Aug. 15, 1967, Nov. 16, 1967, Nov. 16, 1967, 42/2869;42/2870;42/3551; 42/11663; 42/52814; 42/74123; 42/74124

Int. Cl. B60k *31/00*

U.S. Cl. 180—105 **9 Claims**



An apparatus for the steady drive of an automotive vehicle at a predetermined speed setting, having a comparison means for comparing a signal representative of the vehicle running speed with a reference signal representative of the predetermined speed setting and a control means for driving a drive motor output regulator in a speed correcting direction depending on the difference between these two signals. In the apparatus, a third signal is introduced to shift the value of the difference signal and this shifted signal is used to attain the desired stabilization of the running condition of the vehicle.

3,580,356

PRESSURE WAVE SUSTAINED VEHICLE

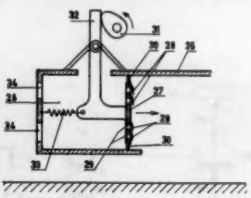
Pieter VanStavern, Pijnacker, Netherlands, assignor to Nederlandse Organisatie voor Toegepast-Natuurweten-schappelijk Onderzoek ten behoeve van Nijverheid, Handle en Verkeer, The Hague, Netherlands

Filed May 27, 1968, Ser. No. 733,224

Claims priority, application Netherlands, May 29, 1967, 6707422

Int. Cl. B60v *1/00*

U.S. Cl. 180—116 **3 Claims**



A method and devices are described for sustaining a vehicle by means of pressure wave pulses generated at the bottom side of the vehicle in the medium below the bottom.

The vehicle is hovering on a continuous sequence of spaced pressure waves which are moving substantially parallel to the bottom of the vehicle and it may be propelled by any appropriate means.

3,580,357

WAVE INTERFERENCE SILENCING SYSTEM

Donald R. Whitney, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

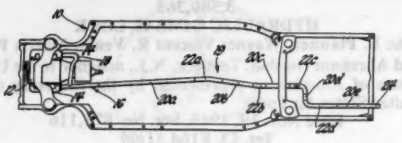
Filed May 22, 1970, Ser. No. 39,705

Int. Cl. F01n *1/06, 1/12*

U.S. Cl. 181—44 **4 Claims**

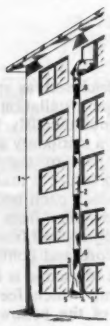
A wave interference silencing system for predictably attenuating sound waves in the frequency noise spectrum of

the exhaust gases from an internal combustion engine wherein a plurality of standardized serially connected attenuating sections includes a pair of discrete flow paths of differing acoustical lengths that are energy and flow compensated to establish actual sound propagational velocities so that the pressure waves of the individual paths are in phase



opposition at the exit end of the transited attenuating section so as to destructively interfere within a low-impedance coupling volume adjacent thereto. The coupling volume serves to equalize the vibrational energy between the separate flow paths and effect a flow stabilization at the entrance end of a succeeding attenuating section.

3,580,358
SAFETY ESCAPE BAG
Masatada Yamamoto, No. 2 Koujimachi Building 4-2, Koujimachi, Chiyoda-ku, Tokyo, Japan
Filed Aug. 8, 1969, Ser. No. 848,523
Int. Cl. A62b *1/20*
U.S. Cl. 182—48 **1 Claim**

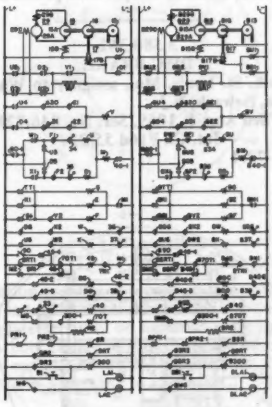


A safety escape chute having a series of pliant tubular columns connected by resilient portions made of spiral mesh so that when a first escaper is in the chute his weight so deforms the spiral mesh resilient portions downwardly that a second escaper cannot pass therethrough and thus cannot collide with the first escaper at the bottom of the chute.

3,580,359
LADDER FOR FRUIT PICKER
Andreys O. Akermanis, 3401 N. Westmoreland Drive, Orlando, Fla.
Filed Nov. 10, 1969, Ser. No. 875,296
Int. Cl. E06c *7/08*
U.S. Cl. 182—49 **6 Claims**

An improved ladder for use by a fruit picker, involving the use of a removable, lightweight receiving basket utilized in conjunction with an elongate tubular member, and arranged to be interfitted therewith so that fruit placed in the basket can be guided into the tubular member and thence carried by this member to a receiving location near the bottom of the ladder. My novel basket is very convenient for a fruit picker to use, and can be easily moved to any one of several locations on the ladder, depending on the height at which the picker may be working.

3,580,360
ELEVATOR SYSTEMS
Phillip C. Keiper, Shrewsbury, N.J.
Continuation of application Ser. No. 406,706, Jan. 28, 1954, now abandoned. This application Dec. 19, 1967, Ser. No. 691,913
Int. Cl. B66b *13/02*
U.S. Cl. 187—29 **17 Claims**

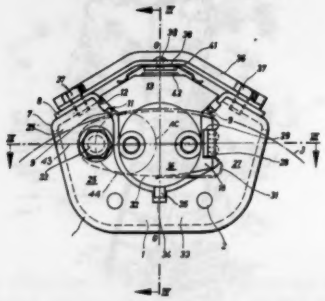


A bank of elevator cars has a dispatching floor. At a landing the doors of an elevator car are held open for a time such as 5 seconds. However, if a person passes through the doorway, the remainder of the time is replaced by a short delay such as one-half second before the doors are reclosed. The time may be reduced to a still lower value by operation of a switch. If a car is at the dispatching floor it is prevented from starting during a dispatching interval.

3,580,361
DISC BRAKE CONSTRUCTION

Giorgio Eggstein, Ospedaletti San Remo, Italy, and Heinz Ungerer, Stuttgart-Zuffenhausen, Germany, assignors to Ernst Heinkel Aktiengesellschaft, Stuttgart-Zuffenhausen, Germany

Filed June 17, 1969, Ser. No. 833,997
Claims priority, application Germany, June 21, 1968, A5974/68
Int. Cl. F16d *55/224*
U.S. Cl. 188—72.4 **11 Claims**

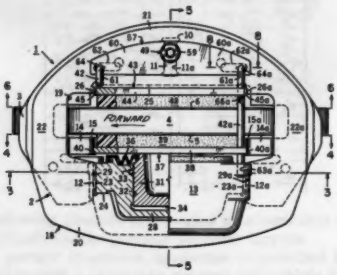


A disc brake comprises a rotor disc mounted for rotation about a predetermined axis. A mounting element straddles a section of the periphery of the disc and is adapted to be secured to a vehicle. A presser element also straddles the section and has portions located at the opposite sides of the disc. It is guided by the mounting element for movement axially of the disc. A friction pad is arranged between each of the portions of the presser element and the associated side of the rotor disc. Mounting means mounts each friction pad for free and independent sliding movement axially of the rotor disc between an inoperative position and an operative position in which latter it frictionally engages the rotor disc. Actuating means is associated with the presser element and one of the friction pads for urging the same in one axial direction to operative position while effecting concomitant movement of the presser element in opposite direction with resulting displacement of the other friction pad by the associated portion of the presser element to operative position.

3,580,362
DISC BRAKE

Edward J. Falk, St. Louis, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Aug. 1, 1969, Ser. No. 846,721
Int. Cl. F16d *55/224*
U.S. Cl. 188—73.4 **29 Claims**

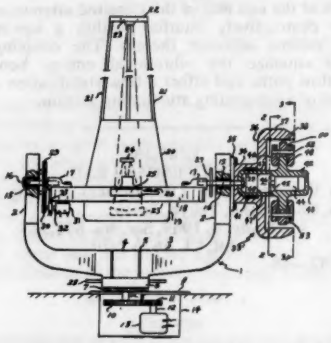


A disc brake having a rotatable disc with a support plate extending across substantially a chordal portion of said disc on which a closed loop member is movable, and actuating means for moving a friction element in one direction into frictional engagement with one side of said disc and for moving said closed loop member in the opposite direction to frictionally engage another friction element connected therewith with the other side of said disc. The support plate includes a pair of anchor means adjacent to said disc one side and embracing said first named friction element and a third anchor means adjacent to said disc other side and connected between said closed loop member and said support plate.

3,580,363
HYDRAULIC GIMBAL LOCK

Moshe L. Plawner, Wayne; Vincent R. Vento, Morris Plains, and Abraham Gordon, Teaneck, N.J., assignor to the United States of America as represented by the Secretary of the United States Air Force

Filed Nov. 19, 1969, Ser. No. 878,116
Int. Cl. F16d *51/00*
U.S. Cl. 188—74 **8 Claims**



An improved lock is disclosed, as applied to the elevation gimbal of a large telescope installation. Hydraulic pressure is employed firmly and simultaneously to force a number of contact members against a stationary surface of circular configuration and forming part of the fork gimbal or yoke pedestal. The hydraulic pressure is made effective by the use of a bellows system in which each bellows carries a contact head positioned a short distance from the stationary surface and the bellows are equally spaced from one another. A solenoid having a movable core and controlled from a position near the eyepiece of the telescope is employed to operate a miniature hydraulic pump which feeds oil under pressure simultaneously to each of the bellows. The latter elongate and press firmly against the stationary surface and at the same time, the motor which drives the gimbal to which the telescope is attached, can be declutched so that instant braking is effected. There is no overrun and the telescope remains strictly in line with the star being sighted when the control is operated.

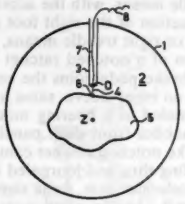
3,580,364
STABILIZATION PENDULUM SYSTEM

Cornelis M. Verhagen, Heemstede, Netherlands (c/o Datawell N.V., Zomerluststr. 4, Haarlem)

Filed Feb. 5, 1969, Ser. No. 796,830
Claims priority, application Netherlands, Feb. 14, 1968, Nov. 29, 1968, 68 02128; 68 17189
Int. Cl. F16d *57/00*
U.S. Cl. 188—87 **17 Claims**

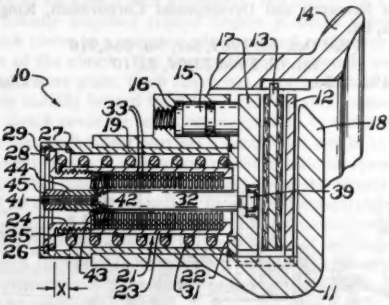
Stabilization pendulum system comprising a vessel filled with a liquid, an object immersed in the liquid, the weight of the object differing very little from the weight of the displaced liquid, and the object containing electrical measuring equipment, the system also including a suspension means attached to the vessel. The suspension means includes a suspension thread one point along the length of which is

fixed, the object attaching to and suspending from the thread. The thread includes a free suspending portion between a point of the vessel and a point of the object, and further includes one or more electrical connectors integral therewith which serve as electrical connections for the measuring equipment. The suspension means also includes a



guiding body, the portion of which is nearest the object defines a guiding surface that includes a bore extending into the guiding body, the free suspending portion of the thread running through the bore whose diameter gradually increases in a direction toward the object. The thread also extends beyond the point of the vessel in a direction away from the object.

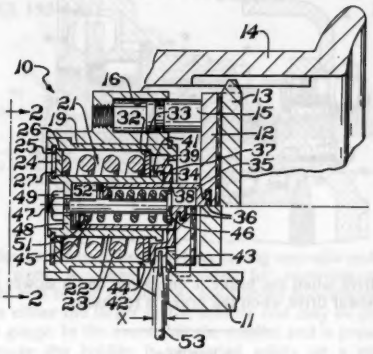
3,580,365
AUTOMATIC ADJUSTMENT MECHANISM PARTICULARLY FOR BRAKES
Ludwik S. Bialkowski, Troy, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed May 19, 1969, Ser. No. 825,717
Int. Cl. F16d *65/54, 55/18*
U.S. Cl. 188—196P **8 Claims**



A brake retractor assembly in which the automatic adjustment mechanism has a plurality of leaf springs in slidable engagement with the retractor rod and a spring engaging member on the rod is disposed so that sliding movement does not occur during retraction of the braking members and limited sliding movement does occur during actuation of the brake providing positive adjustment of the brake to compensate for wear and other changes.

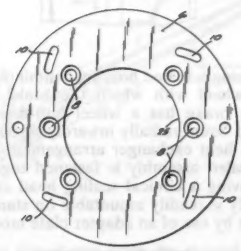
3,580,366
BRAKE RETRACTOR RESETTING MECHANISM
C. Lucas Plaat, and Donald F. Linn, Troy, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.
Filed May 21, 1969, Ser. No. 826,418
Int. Cl. F16d *65/54, 55/18*
U.S. Cl. 188—196 **1 Claim**

A brake retractor assembly in which the automatic adjustment mechanism has a locking plate carried by a sleeve member surrounding the retractor rod and held in tilted locking position during brake retraction and in which the locking plate is automatically moved into unlocked position during brake actuation when the rod is moved beyond the normal brake release clearance distance. A return spring connection between the rod and sleeve member resets the rod automatically to its original position in the sleeve



member upon movement of the locking plate to the unlocked position when the brake lining needs replacement.

3,580,367
UNIVERSAL MOUNTING PLATE AND CONSTRUCTION METHOD
Richard H. McCarthy, Milwaukee, Wis., assignor to Stearns Electric Corporation, Milwaukee, Wis.
Filed Dec. 19, 1968, Ser. No. 785,320
Int. Cl. F16d *65/02*
U.S. Cl. 188—206 **2 Claims**

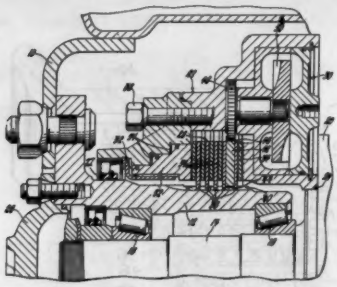


Exemplification consists of a caliper brake end plate which also serves to mount the brake from a motor shell or the like. To hold the plate securely on motors having mounting bolts which are on bolt circles of differing radii, the plate is correspondingly arcuate about predetermined centers offset from the plate axis according to a formula.

3,580,368
DISC BRAKE COOLING MEANS AND PUMP DRIVE MECHANISM
Burnette Heck, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed June 2, 1969, Ser. No. 829,330
Int. Cl. F16d *65/84*
U.S. Cl. 188—264 **4 Claims**

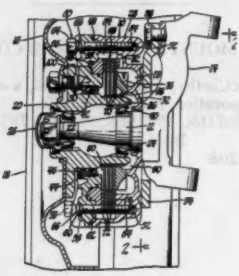
A liquid-cooled disc brake wherein the cooling liquid is pumped through the brake by a small high-speed rotary im-

peller pump driven by the rotating hub of the wheel to be braked. The pump drive uses the disc pack to provide a



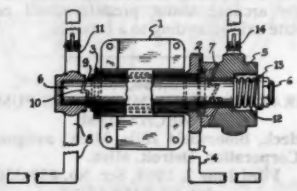
clutch drive when the brake is energized and a slower speed viscous shear drive when the brake is released.

3,580,369
LIQUID-COOLED DISC BRAKE ASSEMBLY
Burnette Heck, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed June 27, 1969, Ser. No. 837,097
Int. Cl. F16d *65/84*
U.S. Cl. 188—264 **4 Claims**



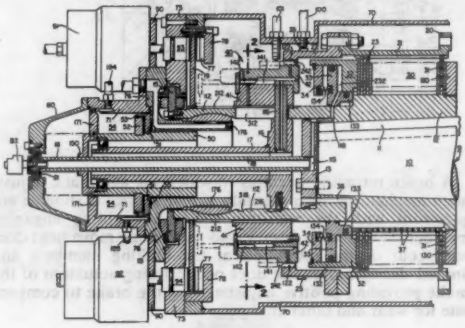
A brake having a sealed housing containing a disc pack for braking the wheel with which the brake assembly is associated. The brake has a wheel hub-driven pump which pumps cooling liquid radially inwardly through the disc pack and then to a heat exchanger arrangement including ballast tanks. The sealed assembly is fastened together with shear head bolts having a conical sealing head construction. The brake assembly is readily mountable on standard production wheel spindles by use of an adapter plate mounting bracket.

3,580,370
AUTOMATIC ACCELERATOR SAFETY DEVICE
James Elvin McCammon, 224 1/2 E. Broadway, West Memphis, Ark.
Filed Aug. 29, 1968, Ser. No. 756,740
Int. Cl. F16d *67/00*
U.S. Cl. 192—3 **2 Claims**



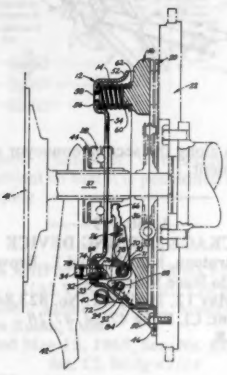
My invention is an Automatic Accelerator Safety Device, a means for braking and accelerating an automobile equipped with an automatic transmission, where the optional phases speed, and direction, are manually controlled, and the remaining functions are automatic. With the L-shaped braking pedal and the L-shaped accelerator pedal mounted on the inner side of the front dash panel, or the braking and accelerator treadle means, each the width of a shoe, mounted on the sloping floor boards, the braking means being activated by action of the left foot depressing the left or brake pedal or left treadle means, with the accelerator means being activated by like action of the right foot depressing the right accelerator pedal or right treadle means, disengaging the accelerator by action of a notched ratchet camlike face at the point where said brake pedal joins the connecting shaft, said shaft journaled in an inner sleeve, same journaled in an outer sleeve, same journaled in a bearing mounted on the motor side of the automobiles front dash panel, to the accelerator arm, engaging a like notched ratchet camlike edge of the end of a sleeve extending thru and journaled in same bearing and secured to the accelerator arm, same sleeve and arm rotating on connecting shaft, driving same accelerator arm out of mesh, disengaging notched ratchet camlike clutch face of the accelerator pedal rotating on outer sleeve said shaft, rendering same accelerator arm inactive, same remaining idle, held in place by a spring means as it is disengaged from the accelerator pedal means, until the braking means, the pedal or treadle is released by the left foot being removed, thus the accelerator arm connecting with the carburetor engages the accelerator pedal or treadle by action of a spring means, driving the notched ratchet camlike face clutch means into engagement, activating the accelerator pedal or treadle when the right foot is depressed or applied. This being the safety feature of my invention, as the automobile cannot be accelerated when the brake is depressed or applied.

3,580,371
SELF-SYNCHRONIZING CLUTCH
Harold O. Kron, Philadelphia; John K. Liu, Valley Forge, and Edward Behnke, King of Prussia, Pa., assignors to King of Prussia Research and Development Corporation, King of Prussia, Pa.
Filed Oct. 16, 1969, Ser. No. 866,916
Int. Cl. F16d *23/04, 23/10*
U.S. Cl. 192—18A **9 Claims**



Clutch means are disclosed comprising a friction clutch in parallel with a positive-drive dental clutch assembly. The friction clutch is first engaged to bring the driven member up to the speed, or almost to the speed, of the driving member. The dental clutch is then engaged to provide a positive drive. The dental clutch assembly includes a sliding helical gear element for automatically aligning the teeth of the dental clutch prior to engagement. Brake means are provided for braking the rotational speed of the slidable clutch element.

3,580,372
CLUTCH WITH ADJUSTABLE CENTRIFUGAL PRESSURE ASSIST LEVERS
Paul J. Schiefer, Sherman Oaks, and James D. McFarland, Jr., Chatsworth, Calif., assignors to Schiefer Manufacturing Company, Monterey Park, Calif.
Filed May 26, 1969, Ser. No. 827,691
Int. Cl. F16d *43/06*
U.S. Cl. 192—105 9 Claims

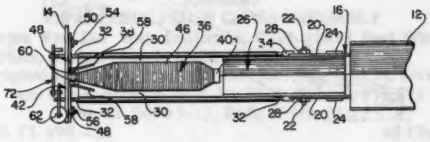


A centrifugal pressure assist type clutch utilizes the constant force of compression springs and a variable dynamic force to load a pressure plate against a driven disc. The clutch is adjustable to vary the dynamic loading of the pressure plate on the driven disc and therefor the engagement force of the clutch with a flywheel. The clutch has a plurality of radially disposed release fingers pivotally secured to a clutch cover in a common plane normal to the axis of rotation of the clutch. The fingers are also pivotally secured to the pressure plate. Each finger has a lever portion which extends radially inward from the finger's pivotal connection to the clutch cover for selective engagement by a clutch release bearing. Each finger also has a centrifugal weight to create a moment which is a function of the rotational speed of the finger that tends to pivot the finger about the pivotal connection to the clutch cover and force the pressure plate against the driven disc. The adjustment of the dynamic loading is effected through movement of the position of the fingers' pivot axes on the clutch cover relative to the finger pivot points on the pressure plate and therefore the moment of the fingers at a given rotational speed.

3,580,373
PORTABLE RAMP
Stanley A. Stickle, Anaheim, Calif., assignor to Clark Equipment Company
Filed Nov. 21, 1968, Ser. No. 777,564
Int. Cl. B65g *11/00*
U.S. Cl. 193—5 2 Claims

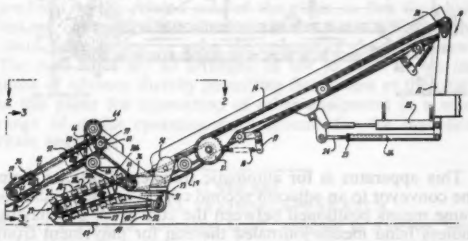
A portable ramp having a plurality of elongated floor members with devices for detachably securing the floor members together in side-by-side relation to form a complete floor portion. A transverse member is detachably secured to the floor member at one end thereof and to a vehicle and another detachable transverse member is detachably secured to the floor portion at the other end thereof.

3,580,374
BOBBIN ORIENTING
Charles W. Brouwer, East Greenwich, R.I., assignor to Leesona Corporation, Warwick, R.I.
Filed Jan. 8, 1969, Ser. No. 789,758
Int. Cl. B65g *11/20*
U.S. Cl. 193—43 2 Claims



A device for orienting bobbins having opposite ends of different sizes. A gauge is provided for receiving only the smaller end of the bobbin. As the bobbin is delivered to the device either the larger or the smaller end may be presented to the gauge. In the event that the smaller end is presented to the gauge the bobbin is supported solely on a trap door which opens so that the smaller end of the bobbin pivots about the gauge as the bobbin is discharged large end downward. If the larger end of the bobbin is presented to the gauge, the smaller end is above an abutment with an intermediate portion of the bobbin supported by the trap door so that when the trap door is opened the smaller end pivots about the abutment and again the bobbin is discharged larger end downward.

3,580,375
SOD-HANDLING MACHINE
John F. Nunes, Jr., 2037 Loquot Ave., Patterson, Calif.
Filed Mar. 3, 1969, Ser. No. 803,825
Int. Cl. A01b *45/04*; B65g *65/06*
U.S. Cl. 198—8 5 Claims

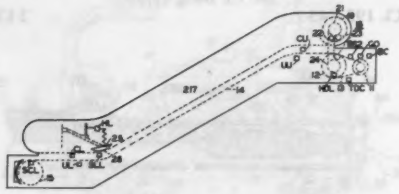


For picking up precut sod from the ground or other support surface, the lower one of a pair of cyclically driven carriers first nudges the transverse edge of the sod upwardly into engagement with a rearwardly moving reach of an upper cyclic carrier. The confronting reaches of the upper and lower carriers engage opposite surfaces of the slab of sod to feed the sod upwardly into the machine for handling.

3,580,376
ESCALATOR SYSTEM HAVING FAULT INDICATOR
Richard C. Loshbough, Toledo, Ohio, assignor to Reliance Electric Company, Toledo, Ohio
Filed Jan. 2, 1969, Ser. No. 788,474
Int. Cl. B66b *9/12*
U.S. Cl. 198—16 8 Claims

An escalator system having a safety circuit to prevent operation under unsafe conditions and including a trouble indicator arranged to respond to any of a plurality of trouble-sensing switches in an escalator control circuit and structure. Two indicators are provided for each trouble condition, one which is actuated while trouble persists and the other is latched to retain an indication of trouble after the sensing

circuit has been reestablished whereby an indication of a currently existing trouble condition is augmented by an indication of a previously existing trouble condition. Advantageously, the indicator can be connected and disconnected from the escalator system and is mounted in a portable case.

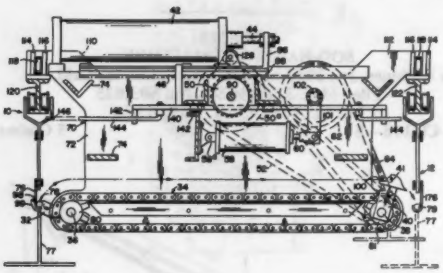


3,580,377

CONVEYOR ARTICLE TRANSFER APPARATUS

Arthur H. Kiehl, 708 Rancho Drive, San Luis Obispo, Calif.

Filed Jan. 15, 1969, Ser. No. 791,373
Int. Cl. B65g *47/00*
U.S. Cl. 198—20 **13 Claims**



This apparatus is for automatic transfer of articles from one conveyor to an adjacent second conveyor and it includes frame means positioned between the conveyors and having endless band means journaled thereon for movement from adjacent one conveyor to a point adjacent the second conveyor. Pickup means are carried by the band means to engage an article on the one conveyor and move it to a point adjacent the second conveyor where article deposit means engage the article on the pickoff means and disengage it therefrom. Control means are provided to operate the article deposit means and place an article thereon onto a support on the second conveyor, and subsequently, by a similar apparatus, to return the article and normally its carrier means to its original position on the first conveyor.

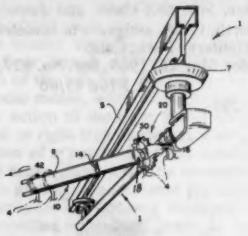
3,580,378

AUTOMATIC HANGER DISCHARGE

Erik J. Pedersen, 1875 Conn. Ave. N.W. Suite 1205, Bethesda, Md.

Filed Nov. 14, 1968, Ser. No. 775,682
Int. Cl. B65g *47/61, 47/36, 47/46*
U.S. Cl. 198—25 **9 Claims**

Hangers such as conventional coat hangers are suspended from a rod carried by a first conveyor. An end of a second conveyor having a toothed rotary transfer element and a guide means is swung into position along the rod. The guide means aligns the hangers on the pipe so that they may be engaged by the teeth of the transfer. As the transfer rotates, it lifts the hangers one at a time from the rod and deposits the hangers on a continuously moving band which is exposed along an upper surface of the second conveyor. The band carries the hangers along the second conveyor and drives the rotary transfer element.

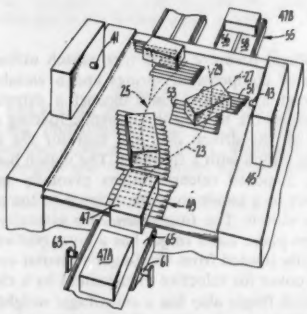


3,580,379

PACKAGE TURNING DEVICE

Joseph Shuster, Saratoga, and Richard L. Brown, Sunnyvale, Calif., assignors to Icore Industries

Filed May 12, 1969, Ser. No. 823,840
Int. Cl. B65g *47/24, 47/26*
U.S. Cl. 198—31AB **4 Claims**



A package turning device wherein a package is supported on a series of carriers which are free to slide from side-to-side on rods carried by endless chains on each side of a conveyor. The turning action is provided by a switching mechanism whereby the front portion of the carton is conveyed in one direction by a series of carriers while the rear portion of the package is supported on carriers which are switched to a different direction, so that as the package travels it is turned about 90° to its previous orientation. In a preferred embodiment of the device, two lanes are provided so that a series of packages in single file are divided into two files with the packages turned at 90° to their former orientation.

3,580,380

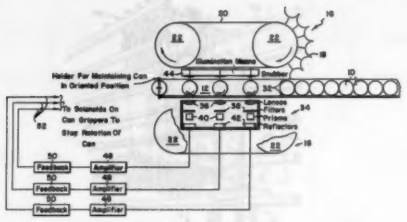
METHOD OF AND APPARATUS FOR ORIENTING INDICIA BEARING CYLINDRICAL OBJECTS

Bryce W. Phillips, Henrico County, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Sept. 11, 1968, Ser. No. 759,139
Int. Cl. B65g *47/24*; G01n *21/28*
U.S. Cl. 198—33 **15 Claims**

Indicia bearing cylindrical objects are oriented prior to being grouped and packaged so that the oriented objects provide their own advertising. In one embodiment, the objects are both rotated and translated as they traverse a plurality of inspection stations, each of which inspects less than a complete revolution of the object but the total of which inspects more than a complete revolution. Whenever any station produces a coincidence signal, rotation of the object is

stopped to permit oriented grouping. In another embodiment, the objects do not rotate until after a coincidence signal is produced by comparison with a segment of the



decorated object. Thereafter, a measured rotation is imparted to the object so that it is positioned in a desired orientation for grouping.

3,580,381

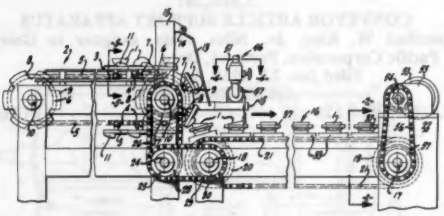
APPARATUS AND METHOD FOR LEVELLING DRUPE HALVES AND THE LIKE

George E. Kilner, Alameda, Calif., assignor to Filper Corporation, San Rama, Calif.

Filed May 15, 1969, Ser. No. 825,005

Int. Cl. B65g *47/24*

U.S. Cl. 198—33 **7 Claims**



Apparatus and method for automatically orienting and conveying hemispherical objects each having a planar surface opposite to a hemispherical surface so said planar surfaces, when facing generally upwardly, but if slanted relative to horizontal, will automatically position themselves, while conveyed along a path of travel, so their planar surfaces are horizontal.

3,580,382

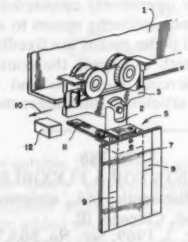
SIGNAL DISABLING DEVICE

Richard E. Nearman, Mount Airy, Md., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Nov. 14, 1968, Ser. No. 775,883

Int. Cl. B65g *43/00*

U.S. Cl. 198—38 **7 Claims**



A signal disabling device for a carrier identification signaling plate used in a conveyor system is described herein. The disabling device of the present invention has a base, a signal indicia mounting means pivoted in the base and held against spring force in a first signal operative position by a latch on a lever. When the lever is tripped, the indicia mounting means is unlatched and is automatically moved into a second inoperative position.

3,580,383

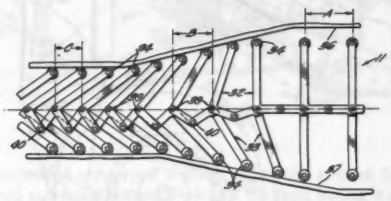
VARIABLE PITCH CHAIN ASSEMBLY

Jurjen Van Der Wal, LaMirada, Calif. (1819 Port Stirling Place, Newport Beach, Calif. 92660)

Original application Jan. 24, 1968, Ser. No. 703,224. Divided and this application Sept. 29, 1969, Ser. No. 870,375

Int. Cl. B65b *9/12*; B65g *15/02, 21/12*

U.S. Cl. 198—16 **45 Claims**



A variable pitch chain link assembly adapted to be operated in tension from a single driving source. Different portions of the chain assembly travel simultaneously at different speeds varying as widely as six to one using a driving power source operating at uniform speed. Basically a single chain assembly suffices to practice the fundamental principles of the invention. A simple link chain is provided equipped with rigid arms projecting from the opposite sides thereof and each effective in cooperation with cam means confined to the related side of the chain to flex the chain linkage either in a direction to shorten or to lengthen the chain pitch depending upon the contour of the cam means. The rigid arms are so arranged as not to pivot across the plane of advance thereby permitting free access to the chain in this plane for connection of other equipment in a wide range of useful operating environments for the invention chain assembly.

3,580,384

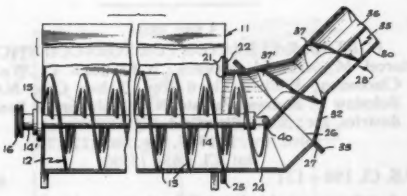
MATERIAL FEEDING APPARATUS

Robert J. Pingree, Torrance, Calif., assignor to Ameron, Inc., Monterey Park, Calif.

Filed Jan. 27, 1969, Ser. No. 794,194

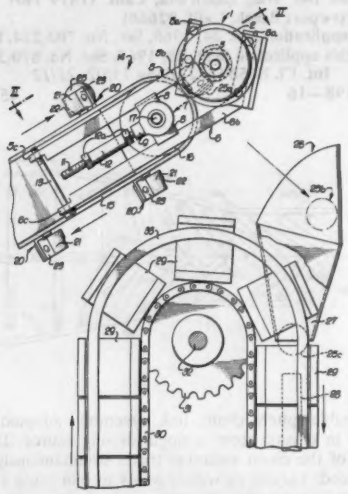
Int. Cl. B65g *33/26*

U.S. Cl. 198—64 **6 Claims**



Screw conveyor means for elevating a relatively thick wet fluid substance, such as cement mortar, in which a first conveyor screw feeds toward a conduit of less diameter containing a second conveyor screw connected to the first by a universal joint located at a point ahead of a converging conduit section at the intake end of the conduit.

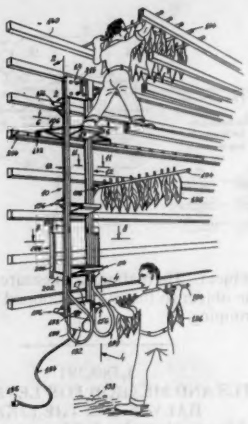
3,580,385
DOUGH FEEDING APPARATUS
Daniel T. Thompson, 10584 Bradbury Road, Los Angeles, Calif.
Filed Dec. 23, 1968, Ser. No. 785,932
Int. Cl. B65g 37/00
U.S. Cl. 198—103 9 Claims



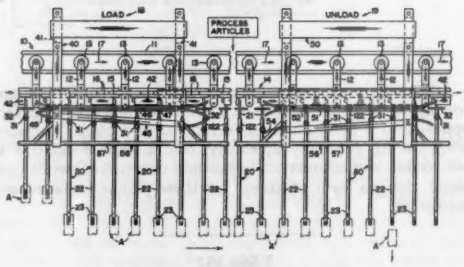
An apparatus for transporting a plurality of divided elements of a tacky dough substance to a predetermined location where the elements are shaped into toroids. An impelling mechanism consisting essentially of driven impeller wheels is associated with the apparatus. The wheels engage and impel the elements from their predetermined location of a conveying portion of the apparatus at a uniformly predetermined rate, to a toroid-forming machine. The use of the impelling mechanism avoids pileup of one element upon another in the toroid-forming machine by overcoming the normally adhering characteristics of the elements to the material of the conveying portion of the apparatus, brought about by the normally tacky nature of the elements. The impelling mechanism, therefore provides only one element at a time through a feeder to a toroid-forming portion of the toroid-forming machine, thereby resulting in a toroid of uniform size and shape. The use of the impelling mechanism further prevents clogging of the toroid-forming machine by enabling only a single element at a time to be fed to this machine, thereby improving product reliability and reducing the rejection rate of the manufactured toroids.

3,580,386
PORTABLE ELEVATOR FOR TOBACCO STICKS
Marcel M. Arnould, Newark, N.J.; John C. Ward, Jr., Clarendon; William Floyd Ray, Tabor City, N.C., and Boleslaw L. Budzyn, Passaic, N.J., assignors to Penstar Industries, Inc., South Plainfield, N.J.
Filed Apr. 1, 1969, Ser. No. 812,179
Int. Cl. B65g 15/00
U.S. Cl. 198—131 9 Claims

A tobacco stick elevator having a pair of transversely spaced uprights with plates joining the top and bottom ends of the uprights. A motor driven endless conveyor chain passes around sprockets on the top and bottom plates. Longitudinally spaced socket bucket structures are fixed on the chain for removably receiving sticks loaded with tobacco leaves. Step units are fixed longitudinally along the uprights extending from one side thereof. A carriage is fixed on the uprights on the other side thereof adapted to ride on a track on a horizontal beam. A spacer frame is provided to hold the uprights away from a vertical supporting surface. Looped handles are also provided for protecting the motor mounted on the bottom plate.



3,580,387
CONVEYOR ARTICLE SUPPORT APPARATUS
Jonathan W. King, Jr., Niles, Ohio, assignor to Georgia Pacific Corporation, Portland, Oreg.
Filed Jan. 23, 1969, Ser. No. 793,372
Int. Cl. B65g 17/20
U.S. Cl. 198—178 11 Claims

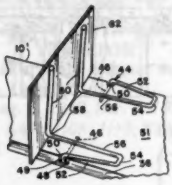


The conveyor article support apparatus relates to a driven conveyor moved through a fixed path and a plurality of hanger means pivotally attached to the conveyor and dependent therefrom, the hanger means including a movable article-piercing means, and control means for the article-piercing means movably positioned in the hanger means and having a control member operatively connected to the control means to move the article-piercing means to and from operative positions. Inclined plane means are fixedly positioned adjacent the conveyor path to engage the control member for moving the article-piercing means to and from operative positions for securing articles to the hanger means.

3,580,388
ATTACHMENTS FOR A FLEXIBLE BELT
Baird E. Resener, Indianapolis, Ind., assignor to Amsted Industries Incorporated, Chicago, Ill.
Filed Mar. 3, 1969, Ser. No. 803,776
Int. Cl. B65g 15/42, 19/00
U.S. Cl. 198—198 8 Claims

A wire member is secured to a belt by tangs projecting into

holes in the sides of the belt. Attachments are secured to the wire member proximate the upper surface of the belt. The



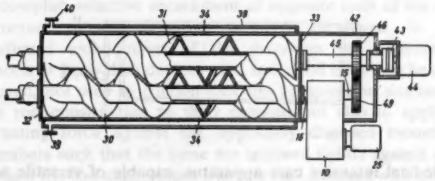
belt may have notches in its sides to retain the wire member flush with the side of the belt.

3,580,389

SCREW CONVEYOR

Friedrich Karl Nonnenmacher, Frankfurt am Main, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jan. 7, 1969, Ser. No. 789,508
Claims priority, application Germany, Jan. 25, 1968, P 1,653,872.0
Int. Cl. F28f *5/06*
U.S. Cl. 198—213 **6 Claims**



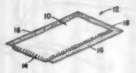
One of two parallel screws rotatable in the same direction in a screw conveyor is rotatable at different speeds from the other screw. This periodically brings the threads of one screw into wiping and cleaning engagement with the threads of the other screw.

3,580,390

PLASTER COLORANT SYSTEM

John D. Shull, Jr., Tonawanda, N.Y., assignor to National Gypsum Company, Buffalo, N.Y.

Filed Feb. 20, 1968, Ser. No. 706,920
Int. Cl. B65d *81/00, 85/00*
U.S. Cl. 206—46 **5 Claims**



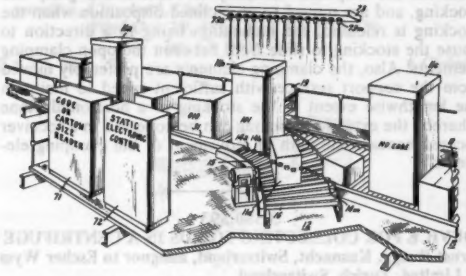
A set of water-soluble film packets each containing one of several available finely ground pigments and, when so desired, an additional amount of finely ground white extender, which are added singly or in any desired multiples to a container of gauging water to which is added a readily available standard quantity of dry cementitious powder, such as plaster, for providing controlled pigmented plaster for precolored plaster walls.

3,580,391

SOLID-STATE PULSED ELECTRONIC CONTROL FOR HIGH-SPEED CONVEYOR SORTING DEVICE

Derwood F. Littlefield, Ballston Spa, N.Y., assignor to General Electric Company, Detroit, Mich.

Filed Oct. 24, 1969, Ser. No. 869,120
Int. Cl. B07c *5/342*
U.S. Cl. 209—73 **15 Claims**



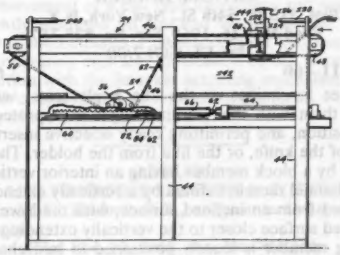
This invention comprises a static electronic control for a high-speed conveyor sorting device of the type having a plurality of serially arranged, electrically operable diverter pins which are selectively raised and lowered between the rollers of at least two conveyor paths to selectively control which conveyor path a particular carton passing through the device is caused to follow. For this purpose a classifying signal is developed by a code reader, carton size measuring circuit, or the like for developing signals indicative of the classification and hence which conveyor path cartons or other objects are to follow. In addition, electro-optical scanning devices are provided for identifying the position or location of a carton traveling along the conveyor sorting device and for developing electric signals indicative of such positions. The electric signals thus developed are processed in a logic circuit which derives output pulsed electric signals that can be applied to the actuating solenoid of a clutch release mechanism or a brake release mechanism of a constant speed apparatus for raising and lowering diverter pins along the conveyor path selectively in accordance with the pulsed electric signals supplied from the static electronic control.

3,580,392

METHOD AND APPARATUS FOR REMOVING A FLACCID ARTICLE FROM A SUPPORT SURFACE

Leslie Starbuck, Nottingham, and Arthur F. Whymark, Loughborough, England, assignors to Speizman Industries, Inc., Charlotte, N.C.

Filed Aug. 19, 1969, Ser. No. 851,222
Int. Cl. B07c *3/06*
U.S. Cl. 209—74 **21 Claims**



Method and apparatus for removing a stocking or the like from a support surface (i.e., conveyor) on which the stocking is positioned with an end portion thereof hanging from the

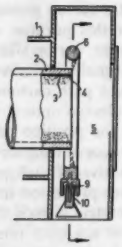
edge of the support surface, including a pair of clamping elements and an operating arrangement therefor which initially disposes them at an open position with the hanging portion of the stocking located therebetween, then closes the clamping elements to grasp the hanging portion, then moves the clamping elements generally horizontally so as to pull the stocking off the support surface, then opens the clamping elements to release the stocking, and then returns the clamping elements to their initial position. Preferably, the clamping elements are disposed vertically to receive and grasp the stocking, and are moved to an inclined disposition when the stocking is released, the inclination being in a direction to cause the stocking to slide from between the open clamping elements. Also, the clamping elements are preferably moved from the support surface with sufficient speed to maintain the lengthwise extent of the stocking in a horizontal plane whereby the extended stocking can be collected in a receiver located beneath the path of movement of the clamping elements.

3,580,393

DEVICE FOR COLLECTING SOLIDS IN A CENTRIFUGE

Ernst Ruegg, Kusnacht, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland

Filed Oct. 17, 1969, Ser. No. 867,169
Claims priority, application Switzerland, Oct. 30, 1968, 16161/68
Int. Cl. B01d *21/26*
U.S. Cl. 210—369 **7 Claims**



In a continuously operating centrifuge for dewatering solids, having a housing and a drum rotatable in said housing, and a member made of flexible material, mounted in said housing, and surrounding at least part of the periphery of said drum, so that said solids issuing from said drum impinge on said member, the improvement that said member is elongated and includes a portion in the form of a toric segment, the toric segment extending substantially in the peripheral direction of said drum, and that said member is mounted to be rotatable in said housing about its longitudinal axis.

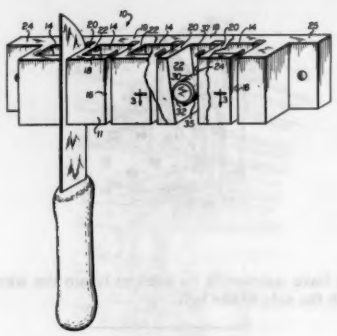
3,580,394

ARTICLE HOLDER

Michael Elliot, 513 W. 54th St., New York, N.Y.

Filed May 16, 1969, Ser. No. 825,357
Int. Cl. A47f *7/00*
U.S. Cl. 211—60 **6 Claims**

A holder for knives or the like implements, serving to maintain them with their cutting edges in a protected enclosed position, and permitting ready selective insertion and removal of the knife, or the like from the holder. The holder is formed by a block member having an interior vertically extending channel therein defined by a vertically extending surface spaced from an inclined surface, with the lower end of the inclined surface closer to the vertically extending surface. A locking member is loosely positioned in said channel for sliding between said surfaces, and a stop member at the lower end of said channel limits the downward movement of said locking member to prevent its being wedged into a jammed position between said surfaces, whereby a knife or the like inserted into said channel will be engaged by said locking member against said vertical surface. The locking member is formed with a chamfered leading edge serving the



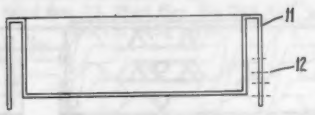
twofold function of implementing insertion of the knife blade and permitting honing of the blade.

3,580,395

INTENSIVE CARE APPARATUS

Robert L. Weaver, 153 Carol Lane, Toledo, Ohio, and Frank D. Myrice, 4700 Temperance Road, Ottawa Lake, Mich.

Filed June 30, 1969, Ser. No. 821,303
Int. Cl. A47f *5/08*
U.S. Cl. 211—87 **2 Claims**



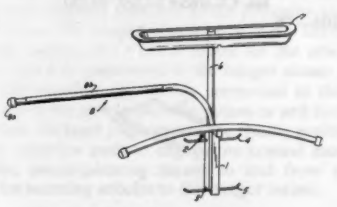
Medical intensive care apparatus, capable of versatile accommodation to different spacial configurations which, as a unit, provides an adequate source of oxygen and a variety of complete suction requirements for installation adjacent to or within a wall at a position of convenience for a patient and medical personnel.

3,580,396

SILENT BUTLER

Johannes Dietz, P. O. Box 61.800, Caracas, Venezuela

Filed Mar. 4, 1970, Ser. No. 16,305
Int. Cl. A47f *5/08*
U.S. Cl. 211—88 **5 Claims**



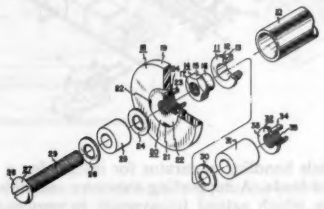
A silent wall butler has a base member mountable on an upright surface of a support. A tray member is carried by said base member upwardly spaced therefrom. A first tubular hanger is connected to the base member projecting therefrom and being turnable about an upright axis. An arcuately curved second tubular hanger is rigidly mounted on the base member projecting beyond opposite lateral sides

thereof. One or more third hangers are also provided on the base member and have end sections extending beyond the aforementioned opposite lateral sides of the base member.

3,580,397
UTILITY ROD AND MOUNTING CONSTRUCTION THEREFOR

Lee Triplett, Salt Lake, Utah, assignor to Expando Products Company, Magna, Utah

Filed Aug. 5, 1968, Ser. No. 750,289
Int. Cl. A47h *1/08, 1/10;* **F16b** *2/00*
U.S. Cl. 211—105.4 **1 Claim**

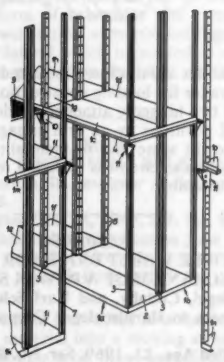


The present invention relates to rod constructions and, more particularly, to a new and improved elongate rod construction wherein the apparatus disposed at each end thereof is easily secured to the rod and is provided with friction-lock means, both for rod retention and for exterior mount placement, such that the apparatus can be easily manipulated to accomplish selective securement of opposite ends of the rod structure to the mounting members employed. In the preferred embodiment of the invention the adjustment wheels or equivalent devices used at the rod ends may be employed, not only to friction-lock the compression sleeves of the rod construction to their mounts, but also to apply a thrusting force against the oppositely disposed mounting members such that the same are retained tightly against and in tight friction engagement with the wall surfaces with which they are associated.

3,580,398
SHELVING SYSTEM

Manfred Schafer, Oberes Gerstenfeld, Germany, assignor to Fritz Schafer K. G., Neunkirchen Kreis Siegen, Germany

Filed July 16, 1968, Ser. No. 745,270
Claims priority, application Germany, July 25, 1967, Sch 43062/34i Gbm
Int. Cl. A47b *9/00;* **A47f** *5/00*
U.S. Cl. 211—148 **8 Claims**

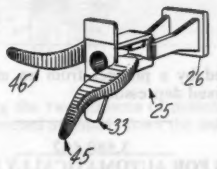


A shelving system consists of shelf units arranged in rows to form passages therebetween and floors or catwalks are provided in the passages at a height which permits operators to walk beneath such floors, the floors preferably consist of gratings or grids supported by brackets hooked on to uprights forming part of the framework of the shelf units.

3,580,399
AUTOMATIC TRAINLINE CONNECTOR

Donald Willison, Lyndhurst, and Kenneth L. Depenti, Mayfield Heights, Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Oct. 29, 1969, Ser. No. 872,036
Int. Cl. B61g *7/06*
U.S. Cl. 213—76 **6 Claims**

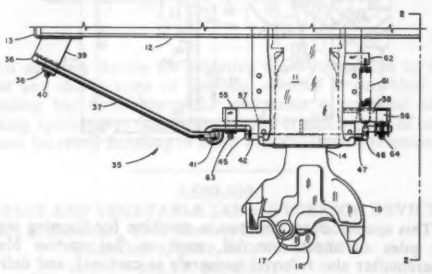


A railway automatic trainline connector has a connector head provided with a pair of forwardly extending and outwardly diverging gathering wings, with one of the wings being provided with a guide rib facing the horizontal plane containing the longitudinal axis of the connector.

3,580,400
ROTARY UNCOUPLING DEVICES

Kenneth L. De Penti, Mayfield Hts., Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Apr. 10, 1969, Ser. No. 815,139
Int. Cl. B61g *3/08*
U.S. Cl. 213—166 **5 Claims**



A coupler unlocking device for railway cars having a rotary coupler including a pivotally mounted arm connected to a coupler knuckle actuating mechanism and imposed in the path of movement of a bail type uncoupling rod assembly independently mounted on the end sill of the car. This improvement contemplates a preassembly of the coupler rotor and the operating arm and application of the rotor in interlock position with the knuckle actuating mechanism located within the coupler head, or removal of the rotor, without disassembly of the arm from the rotor.

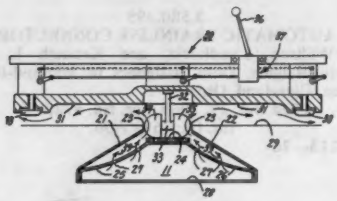
3,580,401
MULTIPURPOSE AIR SUPPLY SYSTEM

Laddie L. Stahl, Rexford, N.Y., assignor to General Electric Company

Filed Dec. 12, 1968, Ser. No. 783,231
Int. Cl. B60r *3/04*
U.S. Cl. 214—1BE **5 Claims**

Air supply is provided by a network of longitudinal channel valves. Each channel valve includes a longitudinal channel member having an opening in the top wall thereof.

Another longitudinal member seated against the underside of the top wall hermetically seals the channel member except



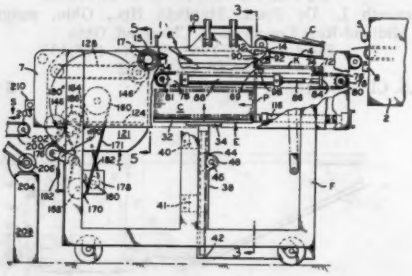
when depressed by a plunger from an air cushion support vehicle or by fixed depressors.

3,580,402

APPARATUS FOR AUTOMATICALLY STACKING AND INVERTING STACKED UNITS OF SHEET MATERIAL

Ingvar L. Tolf; Vernon J. Herzing; Everett L. Miller, Battle Creek, and George L. Lightfoot, Bellevue, Mich., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jan. 30, 1969, Ser. No. 795,187
Int. Cl. B65g *57/11*
U.S. Cl. 214—6C **19 Claims**



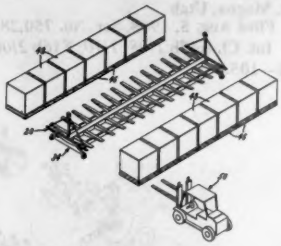
This specification discloses a machine for forming stacks or piles of sheet material, such as flat carton blanks (hereinafter also referred to merely as cartons), and delivering them in properly arranged and oriented condition to a receiving station where they are available for setup or shipment. Cartons are conveyed from a cutting press to an assembly magazine in one or more laterally spaced single file lines. Each line of cartons entering the magazine is jogged or shuffled to form a neat stack or pile on a vertically movable elevator in the magazine. In response to the action of sensing mechanism the elevator is lowered progressively carrying with it the piled cartons until a controlled separator is moved between adjacent cartons of the piled cartons and separates stacks of desired height or number of cartons therefrom, whereupon the elevator is lowered to a predetermined position. A horizontally movable pusher is then operative to push each stack beneath the separator from the elevator into an inverting turret and dispose it or them between opposed relatively movabie clamping and conveying means carried thereby. The turret is rotated 180° thereby inverting the stacked cartons which are then unclamped and traveled by the turret conveying means out of the turret and delivered onto a receiving station. The turret is so designed that it accommodates itself to operate satisfactorily with cartons over a wide range of carton size and thickness, within the limits of the machine, which results in a machine having great versatility and capacity.

3,580,403

MATERIALS HANDLING APPARATUS

Thomas Lancashire, West Chester, Pa., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 30, 1968, Ser. No. 771,955
Int. Cl. B66c *1/00*; B64c *1/22*
U.S. Cl. 214—38 **8 Claims**



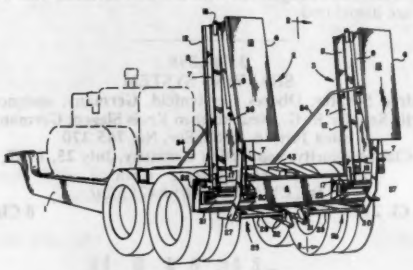
Materials handling apparatus for integrating a plurality of individual loads. A supporting structure includes a plurality of fingers which extend transversely in opposite directions from an elongated beam at spaced locations along the beam. Positioned in a substantially horizontal plane, the fingers are adapted to support individual loads such that they can be raised as a unit upon elevation of the structure. A cradle is provided for moving the supporting structure across a surface and, in a modified embodiment, the fingers can be folded to a retracted position for storage.

3,580,404

LOADING RAMPS FOR TRAILERS

William J. Moser, 2075 Leaf Terrace, Coos Bay, Oreg.

Filed July 31, 1969, Ser. No. 846,523
Int. Cl. B60p *1/44*
U.S. Cl. 214—85 **5 Claims**



Ramp assemblies are disclosed mounted upon the rear of a lowboy-type trailer for loading construction equipment. Each assembly is of two hingedly attached sections collapsible to a raised, stowed positions by an arm engageable with both of the sections to lift same and to maintain same in a stowed position. A hydraulic circuit is included for selective control of each ramp assembly.

3,580,405

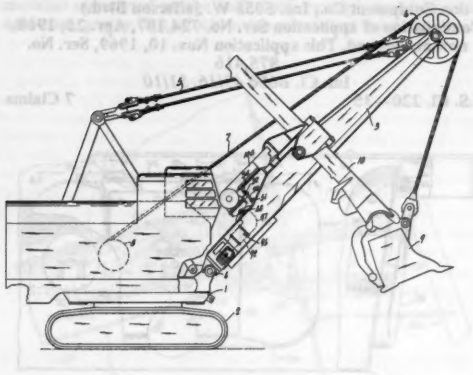
MULTIPLE V-BELT DRIVE FOR A CROWD MECHANISM OF A POWER SHOVEL

Charles R. Siegel, Cudahy, and Karl Schneider, Greenfield, Wis., assignors to Harnischfeger Corporation, Milwaukee, Wis.

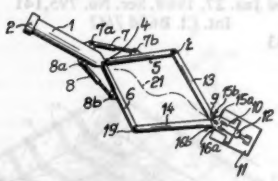
Filed Apr. 23, 1969, Ser. No. 818,641
Int. Cl. E02f *3/00*
U.S. Cl. 214—135 **19 Claims**

Crowd driving mechanism for the dipper stick of a power

shovel, and also including a multiple V-belt and means for tensioning the same. An air supply inside the boom for cooling the belt and motor.



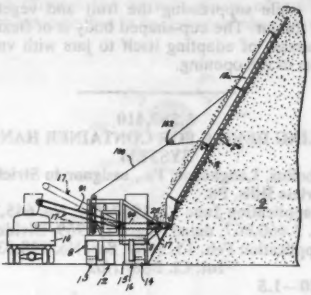
3,580,406
EARTHWORKING MACHINE
Jean-Pierre B. Bellart, Senlis, France, assignor to Societe Anonyme Poclain, Le Plessis, Belleville, France
Filed Aug. 18, 1969, Ser. No. 850,941
Claims priority, application France, Sept. 5, 1968, 165170
Int. Cl. E02f 3/00
U.S. Cl. 214—137 **10 Claims**



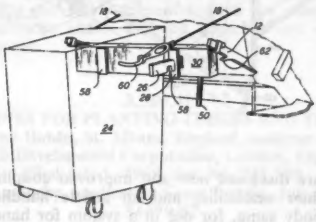
The invention relates to an earthworking machine in which an earthworking implement, such as a drag bucket, is carried by extensible and retractable means to effect forward and backward movement of the bucket, the invention consisting in an improved form of extensible and retractable means which comprises two pairs of arms pivoted together to form a deformable quadrilateral which is pivoted at one of its ends to the jib and has pivoted to its other end the bucket assembly.

3,580,407
METHOD OF RECLAIMING BULK MATERIAL
Fred T. Smith, Aurora, Ill., assignor to Barber-Greene Company, Aurora, Ill.
Original application Oct. 24, 1965, Ser. No. 504,739, now abandoned. Divided and this application June 4, 1968, Ser. No. 739,930
Int. Cl. B65g 65/28
U.S. Cl. 214—152 **8 Claims**

The present invention is directed to a method for converting a stockpile of material into a moving stream of material for loading into another area. More specifically, the method comprises digging into an angled side face of a pile at its lower end along a continuous path of the length of the side face, creating a first upward arcuate stream of material, creating a second stream of material by digging the angle side face of the pile over an upper area which extends above the lower end, merging the two streams of material into a main stream which is directed angularly from the side face.

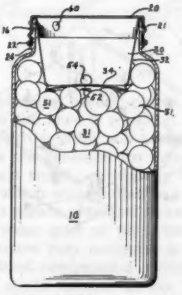


3,580,408
RECEPTACLE DISPOSAL CONTAINER ADAPTER
Augustus L. Newton, 211 Riverthorn Road, Baltimore, Md.
Filed Nov. 13, 1969, Ser. No. 876,441
Int. Cl. B65f 3/02
U.S. Cl. 214—302 **5 Claims**



An auxiliary device for adapting small containers to the hoist and dump arms of disposal vehicles is provided. A spanning bar to fit the usual load arms is provided with locking apertures to receive the narrower spaced lugs of containers for ready handling of same with the usual equipment.

3,580,409
FRUIT AND VEGETABLE JAR SUPPRESSOR DEVICE
Henry J. Soboleski, 1745 Kessler, South Bend, Ind.
Filed Oct. 9, 1969, Ser. No. 864,980
Int. Cl. B65d 51/14
U.S. Cl. 215—81 **9 Claims**



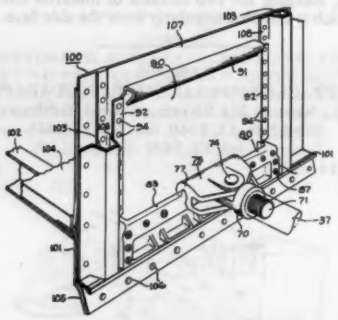
A fruit and vegetable jar suppressor device of a one-piece cup-shaped body construction having sidewalls which taper

inwardly and downwardly and having a bottom joined integrally to the lower edge of the sidewalls. The bottom preferably is concave upwardly and contains a center hole for the admission of liquid in the fruit of vegetable jar into the device while suppressing the fruit and vegetable solid material in the jar. The cup-shaped body is of flexible plastic material capable of adapting itself to jars with variations in the diameter of the opening.

3,580,410
COUPLING DEVICE FOR CONTAINER HANDLING SYSTEM

Andrew Abolins, Langhorne, Pa., assignor to Strick Corporation, Fairless Hills, Pa.

Original application June 12, 1967, Ser. No. 645,157, now Patent No. 3,460,867, dated Aug. 12, 1969. Divided and this application Feb. 13, 1969, Ser. No. 828,030
Int. Cl. B65j *1/02*
U.S. Cl. 220—1.5 **1 Claim**

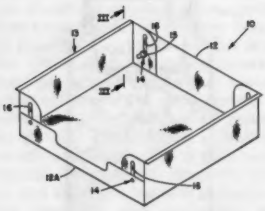


Herein are disclosed new and improved coupling means, and container assemblies and an article handling device which embody same, for use in a system for handling container assemblies, and particularly for transferring container assemblies to and from highway carriers, railway carriers and other mobile and stationary structures. The container assemblies are either of the typical, removable-bogey, highway trailer body type, or are containers with separable chassis equipped with the customary equipment for highway transportation.

3,580,411
CONTAINER HAVING MOVEABLE WALL

Oscar F. Mills, Grand Prairie, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed Feb. 13, 1969, Ser. No. 798,959
Int. Cl. B65d *7/00*
U.S. Cl. 220—4 **8 Claims**

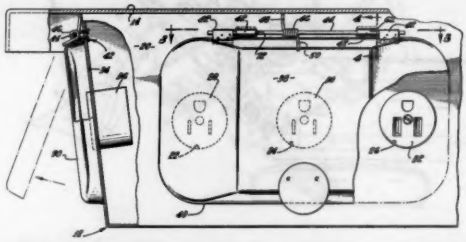


An open-top container or skid having a base, two spaced and parallel sidewalls, and at least one sidewall which is moveable between an upstanding position and a stored position, with the stored position being a position wherein said moveable sidewall lies flat against the base.

3,580,412
HINGE STRUCTURE FOR ELECTRIC POWER DISTRIBUTION BOX OR THE LIKE

Hubert L. Weiss, Los Angeles, Calif. (c/o American Construction Equipment Co., Inc. 5055 W. Jefferson Blvd.)

Continuation of application Ser. No. 724,187, Apr. 25, 1968, now abandoned. This application Nov. 10, 1969, Ser. No. 875,416
Int. Cl. B65d *43/16, 51/10*
U.S. Cl. 220—35 **7 Claims**

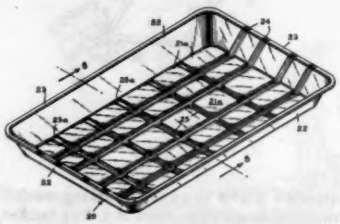


A hinge structure is provided by hinge knuckle elements snapped into position at apertures of the members designed to be hingedly connected. The hinge knuckles are provided with stop flanges and spring means to secure the hinge knuckles in position. A straight hinge pin interconnects the knuckles and the members to be connected, and is restrained against longitudinal movement by the friction imposed by the lateral thrust of a cover closing spring.

3,580,413
CLEAR THERMOPLASTIC MULTI-PLY MEAT TRAY AND ABSORBENT STRIPS

John J. Quackenbush, Monroe, Conn., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Jan. 27, 1969, Ser. No. 795,141
Int. Cl. B65d *7/42*
U.S. Cl. 220—83 **8 Claims**



A clear, plastic tray, and a method for the production thereof, intended for the packaging of food products, such as meats, and the like, where the package contents will be clearly visible. The tray is completely transparent and is produced from sheet material which includes a preinserted strip or plurality of strips of absorbent cellulosic material for the reception and retention of any fluid or fluids which may drain from the package contents subsequent to the packaging.

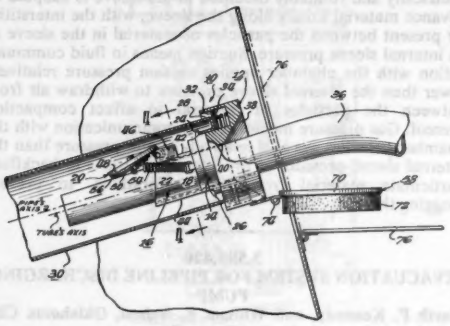
3,580,414
FUELING DEVICE FOR AUTOMOBILES AND THE LIKE

Irwin Ginsburgh, Morton Grove, Ill., and Hilbert J. Nebelsiek, Hammond, Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed Dec. 20, 1968, Ser. No. 785,562
Int. Cl. B65d *39/02*
U.S. Cl. 220—86 **9 Claims**

Our invention concerns a device adapted to be attached to the fill pipe of an automobile's gas tank and to receive the nozzle of a fuel dispenser. Its principal elements are: a cap

member having means which enable said cap member to be attached to the fill pipe, a passageway through the cap member which is adapted to pass the nozzle, and a closure member connected to one end of the passageway which seals said passageway, but which opens whenever the nozzle is inserted into the passageway. The passageway has one end protruding from the fill pipe and another end extending into the fill pipe. The closure member may be attached to either end, or two closure members can be employed, one attached to each end.



3,580,415

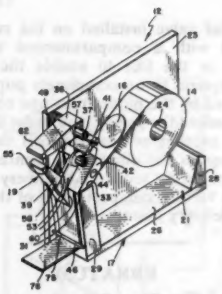
DECAL DISPENSING APPARATUS

Harvey T. Hollinger, Concordia, Kans.

Filed Aug. 11, 1969, Ser. No. 848,950

Int. Cl. B65h *5/28*

U.S. Cl. 221—74 **7 Claims**



This invention relates to a dispensing apparatus operable to dispense decal members carried upon a roll of paper tape through the use of an actuator mechanism adapted to automatically pick up and hold the decals on longitudinal movement of the tape. More particularly, the dispensing apparatus includes an actuator mechanism provided with cooperating male and female actuator arms to grasp and hold the decal member until one desires to remove the same for applying to food products or the like.

3,580,416

METHOD AND APPARATUS FOR DISPENSING ICE CUBES AND THE LIKE

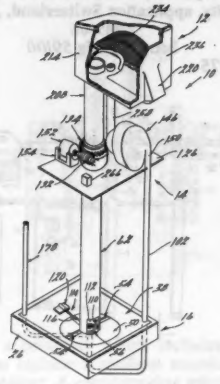
Walter H. Hoenisch, Albert Lea, Minn., assignor to King-Seeley Thermos Co., Ann Arbor, Mich.

Continuation-in-part of application Ser. No. 606,852, Jan. 3, 1967, now abandoned. This application Nov. 12, 1968, Ser. No. 775,094

Int. Cl. B65h *3/60*

U.S. Cl. 221—203 **89 Claims**

A method and apparatus for transferring ice cubes and the like from a storage compartment to a remotely located dispensing compartment, the apparatus comprising passage means extending between the storage compartment and dispensing compartment and means providing a flow of conveying fluid through the passage means of sufficient magnitude to cause ice cubes to be conveyed through the passage means; an ice cube agitating mechanism for selectively agitating ice cubes within the dispensing compartment and for effecting movement thereof toward the passage means, and a discharge chute disposed adjacent one end of the passage means.



3,580,417

MACHINES FOR PLANTING TUBERS AND THE LIKE

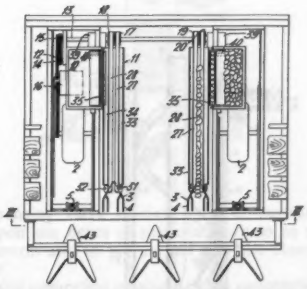
Peter Alfred Hobbs, St. Albans, England, assignor to National Research Development Corporation, London, England

Filed July 1, 1968, Ser. No. 741,759

Claims priority, application Great Britain, July 5, 1967, 31079/67

Int. Cl. B65h *5/00*

U.S. Cl. 221—224 **7 Claims**



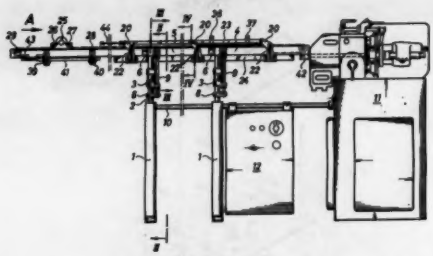
A machine for planting tubers, corms, bulbs or the like, such as potatoes, of the kind in which at least one coulter is adapted to draw a furrow in the soil as the machine is moved forward and means are provided for delivering a succession of the tubers from a supply carried by the machine on to driven belt means which are adapted to feed the tubers into furrow, has the belt means arranged to cause rotation of the tubers at least at some part of their travel along the belt means. The belt means may comprise a delivery trough of which one side at least comprises a continuous belt adapted to be driven at a speed related to the land speed of the machine but preferably both sides of the delivery trough comprise continuous driven belts and the belts are then arranged to be driven at substantially different speeds. The induced rotation of the tubers causes them to string out into line and substantially avoids the presentation of "doubles" to the furrow.

3,580,418

APPARATUS FOR FEEDING ROD STOCK AND THE LIKE

Johannes Werkmeister, Reichenbach (Fils), and Holger Scheler, Faurndau, Germany, assignors to Firma Hermann Traub, Reichenbach (Fils), Germany

Filed June 9, 1969, Ser. No. 831,349
Claims priority, application Switzerland, June 17, 1968, 8989/68
Int. Cl. B65g *59/00*
U.S. Cl. 221—275 **7 Claims**



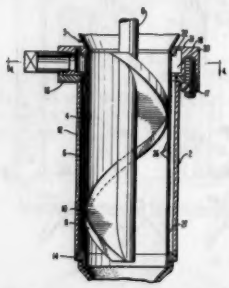
An apparatus for feeding rod-shaped workpieces by means of a feed rod along a trough-shaped channel in a guide rail to a machine tool. During the feeding operation the upper side of the channel in the guide rail is closed by a stationary cover rail, and when the channel is empty, the guide rail is lowered from the cover rail by a plurality of levers which are mounted at one lateral side of the rails so that a new workpiece may be inserted from a magazine rack which is mounted at the other lateral side of the rails.

3,580,419

METHOD AND APPARATUS FOR FEEDING AND COMPACTING FINELY DIVIDED PARTICULATE MATERIAL

Clarence F. Carter, Danville, Ill., assignor to Carter Engineering Company, Danville, Del.

Filed Apr. 2, 1968, Ser. No. 718,123
Int. Cl. B67d *5/88*
U.S. Cl. 222—1 **7 Claims**



A method of feeding and compacting finely divided particulate material, which utilizes a rotating screw feeder for advancing the material along a sleeve passage provided by a stationary foraminous sleeve mounted closely about the screw feeder. The method includes the steps of advancing the particulate material axially along the sleeve with the interstitial air between the particles in the sleeve at an internal sleeve pressure. Suction pressure relatively lower than the internal sleeve pressure is applied to the exterior of the sleeve to withdraw air from between the particles of the material to effect compaction of the material. At predetermined times gas pressure relatively higher than the internal sleeve pressure is applied to the exterior of the sleeve to back-flush material from openings in the sleeve to prevent clogging thereof.

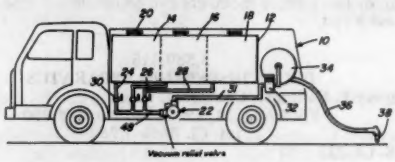
An apparatus for feeding and compacting finely divided particulate material, which includes a housing having fixedly mounted therein a tubular sleeve. The sleeve and housing define at least one closed hollow chamber extending about the sleeve with a plurality of perforations in the sleeve placing the interior thereof in fluid communication with the interior of the chamber. An axially extending screw feeder concentrically and rotatably mounted in the sleeve is adapted to advance material axially along the sleeve, with the interstitial air present between the particles of material in the sleeve at an internal sleeve pressure. Suction means in fluid communication with the chamber applies suction pressure relatively lower than the internal sleeve pressure to withdraw air from between the particles of material to affect compaction thereof. Gas pressure means in fluid communication with the chamber provides gas at a relatively higher pressure than the internal sleeve pressure at predetermined times to backflush particulate material from the perforations, to prevent clogging thereof.

3,580,420

EVACUATION SYSTEM FOR PIPELINE DISCHARGING PUMP

Garth P. Kennedy, and William E. Nelson, Oklahoma City, Okla., assignors to Corken Pump Company

Filed Jan. 27, 1969, Ser. No. 794,264
Int. Cl. B67d *5/04*
U.S. Cl. 222—1 **5 Claims**



A vacuum relief valve installed on the suction side of a pump employed with a compartmented tank on a fuel delivery vehicle or the like to enable the pump and associated piping system to be completely purged of fuel that has been conveyed by the pump from one compartment to a delivery nozzle before the piping system for the pump is communicated with another compartment of the tank having a different fuel therein for eliminating contamination of one fuel with another during sequential delivery of various types of fuel from the various compartments of the multicompartment tank to a delivery point.

ERRATUM

For Class 222—5 see:
Patent No. 3,579,964

3,580,421

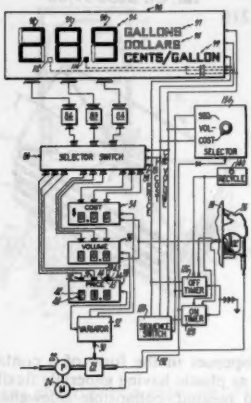
FLUID DISPENSING APPARATUS INDICATOR SYSTEM

John H. Bickford, Middletown, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Nov. 20, 1969, Ser. No. 878,319
Int. Cl. B67d *5/16*
U.S. Cl. 222—27 **30 Claims**

A fuel dispensing system having an indicator subsystem with a liquid crystal indicating device adapted to be operated for displaying, one at a time, the established unit volume price of fuel, the volume of fuel delivered and the total cost of the fuel delivered. A sequencing switch provides for operating the indicating device to display the cost, volume and price information in sequence at the beginning and end of a fuel delivery and a manual selector provides for selectively operating the indicating device to continuously display the cost or volume or sequentially display the cost, volume and price during the delivery. The price is displayed between deliveries and a recycle button provides for temporarily displaying the cost, volume and price information both during

and between deliveries. A two-product dispensing system schematically shown in FIG. 2 comprises two indicator

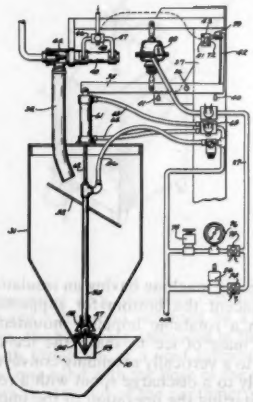


subsystems and a manual selector for selection the product information to be displayed by each subsystem.

3,580,422
APPARATUS FOR ADDING FINELY DIVIDED SOLID MATERIAL TO A MIXTURE

Nelson Hartley, Towson, Md., assignor to Hartley Controls Corporation, Neenah, Wis.

Filed Nov. 25, 1968, Ser. No. 778,422
Int. Cl. B67d *5/56*
U.S. Cl. 222—57 **8 Claims**

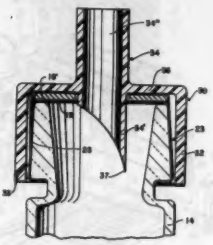


This disclosure relates to apparatus for adding both a liquid and a finely divided solid to a mixture and in which the quantity of finely divided solid that is added is measured in direct proportion to the liquid deficiency of the mixture and in which the mechanism for measuring out the addition of finely divided solid is directly responsive to a liquid deficiency sensing mechanism which operates a reversible motor. The motor turns a shaft which controls both the liquid deficiency make-up mechanism and the finely divided solid make-up mechanism. The device is particularly adapted for bond compensation in a foundry where the mixture is foundry sand, water, and bond.

3,580,423
CONTAINER CLOSURE AND APPARATUS FOR OPENING SAME

John M. Gilman, Cincinnati, Ohio, assignor to The Realistic Company, Cincinnati, Ohio

Filed Feb. 27, 1969, Ser. No. 802,821
Int. Cl. B67b *7/30*
U.S. Cl. 222—81 **6 Claims**

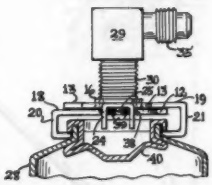


A closure for a container which includes an impervious disc and can also include a resilient annulus overlying the mouth of the container. A retaining ring attached to the container adjacent the mouth having an inwardly directed flange overlies the disc and the annulus to hold the disc and the annulus firmly in assembled relation forming a seal with the mouth. A cap having a tubular spout with a pointed inner end perforates the disc to discharge contents of the container.

3,580,424
DISPENSING VALVE FOR A SEALED PRESSURIZED CONTAINER

Virgil Philipps, Chicago, Ill., assignor to Federal Auto Products Co., Inc., Chicago, Ill.

Filed Oct. 27, 1969, Ser. No. 869,592
Int. Cl. B67b *7/26*
U.S. Cl. 222—89 **5 Claims**



A dispensing valve carried by a connector adapted to clamp upon the bezel of the container so as to center the valve thereon and to pierce and seal the closed top of the container.

The valve comprises a valve head, a penetrating dispensing tube and a seal. When the valve is clamped on to the bezel of the container the valve head is threaded through the clamping connector causing the seal to contact the top of the container at the point of penetration thereof by the dispensing tube. The valve and the connector can be removed and reused when the contents of the pressurized container have been dispensed.

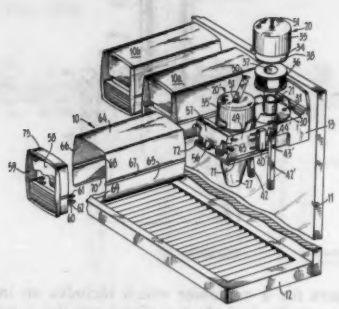
3,580,425
BEVERAGE DISPENSER

Heiko T. DeMan, Morago, Calif., assignor to Electronic Dispensers International, Oakland, Calif.

Filed Sept. 26, 1968, Ser. No. 762,760
Int. Cl. B67d *5/56*
U.S. Cl. 222—129.1 **10 Claims**

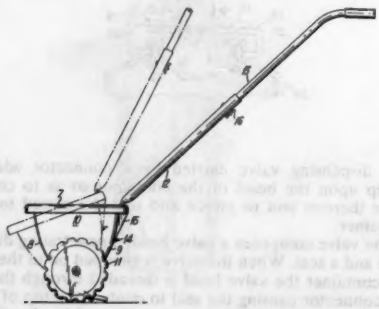
A beverage dispenser for selectively or concurrently dispensing syrup and carbonated water therefrom. The

discharge of such fluids from the dispenser is controlled by a pair of solenoid operated valves respectively associated with switches actuated by levers that depend from the dispenser adjacent the discharge nozzle thereof. The dispenser includes a body structure supporting the various functional components of the dispenser, and a resilient cover slidably related to the body structure is readily removable therefrom to



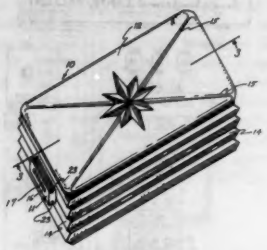
provide access to such switch devices, valve parts, and the solenoid controls for the valves. The dispenser further includes a face piece cooperative with the cover in enclosing such functional components, and the face piece is snap-connected with the body structure so as to be easily removed therefrom in providing access to the functional components of the dispenser.

3,580,426
FERTILIZER DISTRIBUTOR
Peter R. J. Manning, Southfields, England, assignor to Tri-Ang Toys Limited, London, England
Filed July 17, 1969, Ser. No. 842,548
Claims priority, application Great Britain, July 18, 1969, 34284/68
Int. Cl. A01c *15/00*
U.S. Cl. 222—177 **7 Claims**



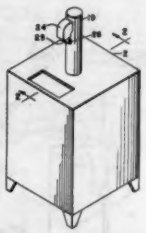
A garden fertilizer distributor comprises a hopper having a bottom outlet and supported on a pair of wheels mounted one on each end of a roller. The roller is formed with longitudinal pockets which deliver metered quantities of the fertilizer to the outlet as the roller rotates with the wheels in use. A closure plate is pivoted on the hopper and is spring loaded to a position in which it closes the hopper outlet. Two marker fingers are rigid with the closure plate and engage the ground when the hopper is tilted to a position of use and thereby swing the closure plate about its pivot away from the hopper outlet to permit delivery of fertilizer through the outlet.

3,580,427
CREAM DISPENSER WITH PLEATED WALLS AND LIP TYPE OPENING
Robert E. Clarke, 1410 Saratoga Drive, Bel Air, Md.
Filed Nov. 8, 1968, Ser. No. 774,384
Int. Cl. B65d *37/00*
U.S. Cl. 222—215 **1 Claim**



A cream dispenser in the form of a container of flexible material such as plastic having generally flexible top and bottom walls and pleated, collapsible sidewalls, an opening in one sidewall in the form of an elongated slit, flexible lips along the opposite sides of the slit, the lips normally closing the slit but being deflectable outwardly to permit discharge of the contents upon pressure being applied to container to collapse the same and said lips being deflectable inwardly upon insertion of a nozzle to recharge the dispenser and a removable closure for the opening.

3,580,428
ICE DISPENSING MACHINE
Howard A. Garber, 1010 First Ave., Richmond, Va.
Filed Mar. 15, 1969, Ser. No. 816,316
Int. Cl. B67d *5/52*; **G01f** *11/10*
U.S. Cl. 222—241 **10 Claims**

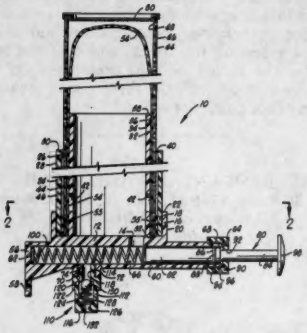


An ice dispensing machine having an insulating casing with a platform adjacent the bottom for supporting a mass of flaked ice with a rotatable impeller mounted adjacent the bottom of the mass of ice to shave the ice therefrom and direct such ice to a vertically extending conveyor for carrying the ice upwardly to a discharge spout with a receptacle actuated lever for starting the operation of the impeller and conveyor.

3,580,429
PASTE DISPENSER WITH INTERCHANGEABLE BAGGED CARTRIDGES
John P. Trindle, Oklahoma City, Okla., assignor to Robert L. Fairbanks, Oklahoma City, Okla.
Filed Dec. 10, 1968, Ser. No. 782,550
Int. Cl. G01f *11/06*
U.S. Cl. 222—327 **10 Claims**

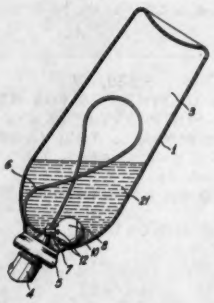
A dispenser for dispensing a measured amount of nonsolid material such as, for example, paste hand cleaner, the dispenser receiving interchangeable cartridges containing the fluid material in operative affixture, and including a manually

depressible extracting valve in communication with the paste material and serving to dispense a proportionate amount upon depression of the valve; the cartridge including a liner



protecting the paste material from exposure to the surrounding air, the liner also being secured within the cartridge to regulate the evacuation of the paste material.

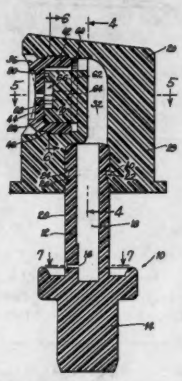
3,580,430
AEROSOL CONTAINERS
Henry Angele, Riscle, Gers, France, assignor to Etablissements Valois, Marly-le-Roi, Yvelines, France
Filed Apr. 22, 1969, Ser. No. 818,274
Claims priority, application France, Apr. 25, 1968, 149,367
Int. Cl. B65d *83/14*
U.S. Cl. 222—394 **8 Claims**



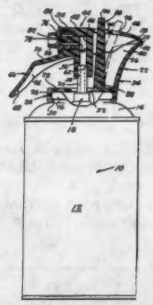
A liquid-dispensing (e.g. aerosol) container has a long plunger tube with a free end weighted by a cup and a ball carried thereon, the ball being embraced in fluidtight manner by the cup with formation of a void therebetween communicating on the one hand with the bore of the tube and on the other hand with the interior of the container via one or more passages in the cup.

3,580,431
AEROSOL VALVE TIP AND STEM ASSEMBLY AND METHOD OF ASSEMBLING SAME
Clarence O. Kuffer, Niles, and Thomas McAvoy, Roselle, Ill., assignors to Valve Corporation of America
Continuation of application Ser. No. 703,103, Feb. 5, 1968, now abandoned. This application Mar. 20, 1970, Ser. No. 21,251
Int. Cl. B65d *83/00*
U.S. Cl. 222—402.1 **8 Claims**

This application describes and illustrates a method of making an aerosol valve tip and stem assembly and the interlocked assembly. The interlocked assembly is comprised of a tip and stem, one being a hard material defining a recess or notch, and the other being of a soft cold-flowable material that is caused to cold-flow into the notch when the two members are telescopically assembled. When the members are assembled, the soft cold-flowable material cold-flows into the notch to interlock the members and to make disassembly thereof difficult.



3,580,432
ACTUATING MECHANISM FOR PRESSURIZED FLUID DISPENSER
Ray G. Brooks, 2505 Custer Court, Irving, Tex.
Filed July 16, 1969, Ser. No. 842,201
Int. Cl. B65d *83/00*
U.S. Cl. 222—402.13 **7 Claims**

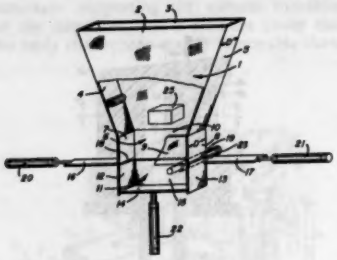


An actuating mechanism for pressurized fluid dispensers involves a cap having a pillar with a hinged body carrying a tubular element engageable with the dispenser spout. The mechanism includes a trigger secured to the body whereby the application of force to the trigger depresses the body with the consequent movement of the tubular element and spout. Changeable nozzles direct the spray to selected target areas, and a locking system prevents inadvertent spray emission.

3,580,433
CIGARETTE TUBE PACKAGING APPARATUS
Arnold Kastner, 10220 Armand Lavergne, Montreal North 39, Quebec, Canada
Filed Mar. 3, 1969, Ser. No. 803,796
Claims priority, application Canada, Nov. 13, 1968, 035,079
Int. Cl. G01f *11/28*
U.S. Cl. 222—440 **16 Claims**

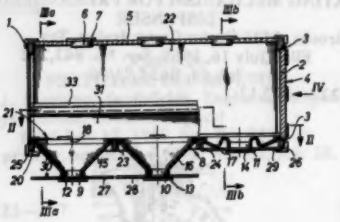
A packaging apparatus for cigarette tubes including a supply hopper for the cigarette tubes and a chamber posi-

tioned beneath the supply hopper and in communication therewith. And at least one separation blade mounted for horizontal reciprocal movement to project into the chamber



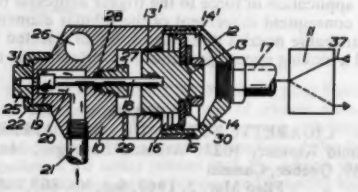
and divide the supply hopper and the chamber. The chamber having a vertically reciprocal bottom panel and a horizontally reciprocal rear panel and an open front.

3,580,434
CONVERTIBLE TRANSPORT CONTAINER WITH PLURAL FUNNEL-TYPE OUTLETS
Artur Spitzer, Mosbach, Baden, Germany, assignor to Ludwig Spitzer Sen. KG (Kommanditgesellschaft), Sonnenhalde, Germany
Filed Aug. 26, 1968, Ser. No. 755,284
Claims priority, application Germany, Oct. 9, 1967, S112326
Int. Cl. B67c *11/00*
U.S. Cl. 222—461 **6 Claims**



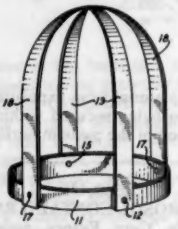
A rectangular, stackable shipping container having top filling openings, a dustproof end closure in the form of hinged doors, and a plurality of collapsible funnel discharge openings. The funnels occupy a minimum amount of space when collapsed and enable the full use of the available container volume.

3,580,435
SPRAY GUN WITH PRESSURE OPERATED VALVE
Alf Georg Bertilsson, Harlingstorp, Axvall, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Apr. 15, 1968, Ser. No. 721,304
Int. Cl. B67d *5/06*
U.S. Cl. 222—504 **6 Claims**



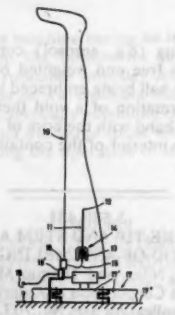
In a spray gun the supply of coating material to the nozzle means of the gun is controlled by a pressure fluid-actuated differential servo piston means dividing the cylinder thereof in a first cylinder chamber around the stem and a second cylinder chamber opposite to the first cylinder chamber. During both strokes of the servo piston means the first cylinder chamber is pressurized by pressure fluid. A maneuvering valve is provided for either supplying pressure fluid to the second chamber for producing one of the strokes of the servo piston means against the action of pressure fluid in the first chamber, or relieving the pressure fluid in the second chamber for releasing the other stroke of the servo piston means under the action of said pressure fluid in the first chamber. More particularly the servo piston means may be of tandem design for quick actuation.

3,580,436
DEMOUNTABLE WIG STAND
Eugene W. Di Luco, 1760 Miriam St., North Brunswick, N.J.
Filed Apr. 7, 1970, Ser. No. 26,252
Int. Cl. D06f *59/00*; **A41h** *5/00*
U.S. Cl. 223—66 **6 Claims**



A demountable wig stand provided with a strip, the opposite ends of which are attachable together to form a base; and having a second strip attached to the first strip at one end, and also attachable at its other end to the first strip; a third strip is attached medially to the middle of the second strip, with its ends attachable to the base, to define a cagelike stand for a wig.

3,580,437
METHOD AND APPARATUS FOR MAKING HIP STOCKINGS FOR PANTY HOSE AND THE LIKE
Fritz Vorberg, Bischofswiesen-Winkl, Germany, assignor to Globotex AG, Zug, Switzerland
Filed Feb. 10, 1969, Ser. No. 797,847
Claims priority, application Germany, Mar. 5, 1968, G52570
Int. Cl. D06c *5/00*
U.S. Cl. 223—75 **10 Claims**



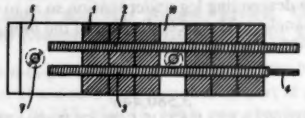
A method of making stockings for panty hose comprising the steps of placing a crude stocking on a hose mold for shaping and treatment and making an elongated cut in the texture of said stocking while in place on said hose mold. The

apparatus of the invention includes a shaped hose mold for shaping and treatment of a hip length stocking placed thereon and a cutting means is mounted on the hose mold or in the path of said mold for making a precise elongated cut in the hip portion of a stocking which is placed on the hose mold so that a pair of said stockings may later be assembled into a pair of panty hose or may be worn as hip-high stockings.

3,580,438
WRISTBAND

Jean Ernest Paul Raval, rue du Lac, 2416 Les Brenets, Switzerland

Filed Nov. 26, 1968, Ser. No. 778,925
Claims priority, application Switzerland, Nov. 28, 1967, Mar. 26, 1968, 16713/67;4476/68
Int. Cl. A44c *5/00*
U.S. Cl. 224—4 **13 Claims**

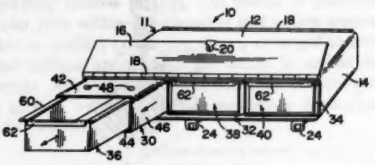


A wristband formed of elements assembled in end to end relationship and mounted on at least one flexible assembly wherein the said assembly is constituted by a helical spring surrounding a clamped extruded steel wire.

3,580,439
VEHICLE LUGGAGE CARRIER

Lawrence A. Jewett, 17383 Greenbrier Drive, Strongsville, Ohio, and Walter C. Jewett, Box 245 Gripps Road, Willington, Ohio

Filed Mar. 4, 1969, Ser. No. 804,243
Int. Cl. B60r *9/04*
U.S. Cl. 224—42.1 **8 Claims**



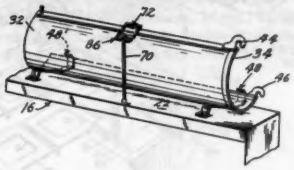
A vehicle top luggage carrier having a container removably fastened to the top of a vehicle. The container has a top, bottom, sides and an opening in front and back to permit access to the inside of the container. Hinged doors cover the openings. Drawer shells are slidably received through the openings in the container and themselves have a top, bottom and sides. The front and back of the shells are open to permit drawers to be slidably received in the drawer shells. Depressions on the top of the shells and complementary projections on the bottom of the shells permit them to be stacked and interfitted in a vertical position.

3,580,440
AUXILIARY CHUTE HOLD-DOWN MEANS FOR A TRUCK MOUNTED CONCRETE MIXER

William H. Fry, and Lawrence G. Zerba, Independence, Iowa, assignors to Construction Machinery Company, Waterloo, Iowa

Filed Feb. 13, 1969, Ser. No. 799,044
Int. Cl. B60r *11/06;* **B60p** *3/16*
U.S. Cl. 224—42.31 **11 Claims**

An auxiliary chute holddown means for a truck mounted concrete mixer including a pair of spaced apart support brackets secured to the mixer truck at one side thereof. The brackets are adapted to removably receive the auxiliary chute thereon and are adapted to support the chute in such a position so that one of its side edges is disposed laterally of and above its other side edge. An elongated flexible chain member is secured at one end to the truck between the brackets and has a movable cam lock means secured to its other end which is adapted to engage the uppermost chute

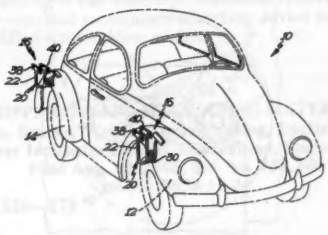


side edge. The brackets include lip portions which extend over the other chute side edge to assist in maintaining the chute on the brackets. The cam lock means is movable from an unlocked position with respect to the chute wherein the flexible member is substantially tension free to a locked position with respect to the chute wherein the flexible member is under tension to maintain the chute on the brackets.

3,580,441
CLAMPLESS FENDER MOUNTED BRACKET

Richard C. Zercher, Box 130A, R.D. 02, Lititz, Pa.

Filed Apr. 30, 1969, Ser. No. 820,487
Int. Cl. B60r *9/00*
U.S. Cl. 224—42.31 **3 Claims**



A cargo-carrying bracket adapted to be attached to a fender without clamps includes a load-bearing member adapted to be received in an inwardly directed channel on the edge of the fender, a load-supporting element extending from the load-bearing element, and a counterbalancing brace extending from the load-bearing element and adapted to engage the inner surface of the fender to balance a load applied to the load-supporting element.

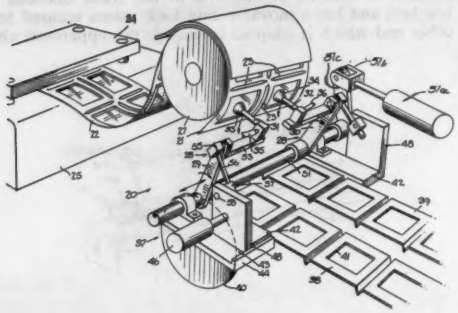
3,580,442
METHOD AND APPARATUS FOR TRANSFERRING ARTICLES AND THE LIKE

Howard A. Rohdin, Waquoit, Mass., and Fred P. Brown, Jr., Centerville, Mass., assignors to Packaging Industries, Inc., Hyannis, Mass.

Filed Apr. 4, 1968, Ser. No. 718,732
Int. Cl. B26f *3/02*
U.S. Cl. 225—2 **32 Claims**

The method and apparatus of the disclosure relate to the transfer of articles that are formed in a predetermined array at a fixed center-to-center relationship to form another predetermined array of articles which have a center-to-center relationship different from the first predetermined array. The apparatus includes at least one transfer arm, that is equipped

with a suction cup for pulling an individual article from its position in the first predetermined array, and for holding the

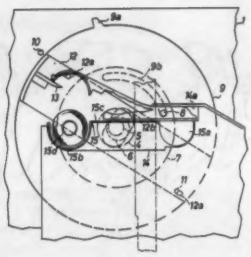


article while it is transferred from that position to a position in the second predetermined array.

3,580,443
APPARATUS FOR OPENING FILM CASSETTES

Fridolin Hennig; Hans-Jurgen Kellner; Klaus Potz, and Christian Gotze, Munich, Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 21, 1969, Ser. No. 792,288
Claims priority, application Germany, Jan. 19, 1968, Sept. 14, 1968, P 16 22 303.3 and P 17 97 336.3
Int. Cl. B26f *3/00*
U.S. Cl. 225—96.5 22 Claims



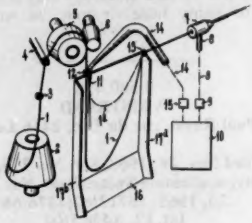
Apparatus for opening plastic housings of film cassettes comprises a support which can hold a housing in a predetermined position, a tool having a cutting edge which is movable against and penetrates into the housing to produce therein a crack, and means for thereupon moving the tool with reference to the housing or vice versa so that the crack is propagated until the housing is sufficiently opened to permit evacuation of the reel which carries exposed film.

3,580,444
DEVICE FOR LOCALIZING AN EXCESS IN LENGTH IN A THREAD

Hubert P. Van Mullekom, Deurne, North Brabant, Netherlands, assignor to N. V. Machinefabriek L. Te Strake, Deurne, Netherlands

Filed Aug. 26, 1968, Ser. No. 755,260
Claims priority, application Netherlands, Sept. 4, 1967, 6712130
Int. Cl. B65h *17/32*
U.S. Cl. 226—97 3 Claims

This device, which is adapted to be interposed between a device for continuously supplying a thread and a device for intermittently conveying the thread, comprises first and second thread-guiding elements, between which is a space in which an excess in length in the thread can hang down from such elements in the form of a loop. A downward-directed nozzle is arranged adjacent to the first thread-guiding element, through which thread enters the loop, for discharging

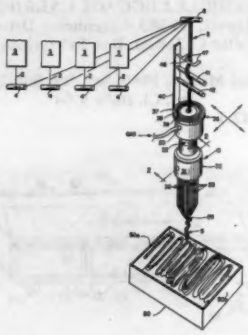


fluid downward along the descending leg of the loop in order to place the descending leg under tension so as to prevent the loop from tangling. The ascending leg of the loop is relatively free of tension.

3,580,445
GUIDING APPARATUS FOR ELIMINATING ENTANGLEMENT AND TWIST IN PUDDLED MULTIFILAMENT YARN

Robert B. Moore, Jr., Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 16, 1969, Ser. No. 833,422
Int. Cl. B65h *17/32*
U.S. Cl. 226—97 2 Claims



A guiding apparatus for eliminating filament entanglement and twist in a multifilament ribbon of yarn puddled by a gas-operated puddling jet. The apparatus is revolvably mounted on the inlet end of a puddling jet and provides a snubbing action on the yarn whereby the adverse effect produced by the twisting vortex of the jet may be minimized.

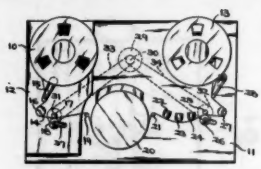
3,580,446
MAGNETIC TAPE MOVEMENT-INITIATION SYSTEM

Yoshiyo Wada; Katsuya Yasutake, Yokohama, and Yoshikazu Terao, Tokyo, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Aug. 14, 1969, Ser. No. 850,130
Claims priority, application Japan, Aug. 16, 1968, 43/58,027
Int. Cl. G11b *15/43*
U.S. Cl. 226—108 10 Claims

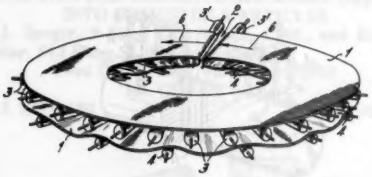
A magnetic tape movement-initiation system which causes two magnetic tape drive means to operate such that one means is actuated with a time lag with respect to the other means. Said two magnetic tape drive means are mounted in the path of travel of a magnetic tape paid out from a supply

reel and wound on a takeup reel such that one means is disposed on the supply reel side and the other means is



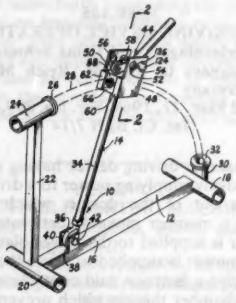
disposed on the takeup reel side with respect to magnetic heads which are brought into contact with the magnetic tape.

3,580,447
TEXTILE TREATING APPARATUS
Eduard Kusters, and Max Kruger, Krefeld, Germany, assignors to Eduard Kusters Maschinenfabrik, Krefeld, Germany
Continuation-in-part of application Ser. No. 729,748, May 16, 1968, now abandoned , Continuation-in-part of application Ser. No. 729,748, May 16, 1968, now abandoned. This application May 22, 1969, Ser. No. 826,990
Int. Cl. B65h *17/42*
U.S. Cl. 226—119 **17 Claims**



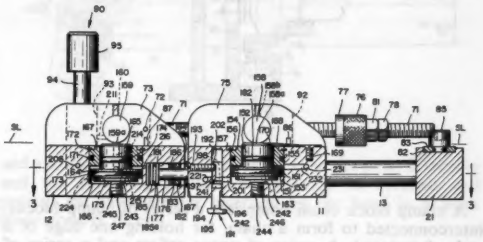
This disclosure relates to a textile-treating apparatus wherein the textile is conveyed through a chamber and appropriately treated therein. The textile is conveyed along a circular path within the chamber and in one embodiment includes an endless conveying means arranged to form a screw thread surface upon which the textile is moved through the chamber. Alternatively, the textile may be conveyed along a grid surface by means of an oscillating movement thereof, again in a circular path.

3,580,448
CABLE FEED DEVICE
Buddy L. Cagle, Sr., 3326 E. 27th Place, Tulsa, Okla.
Filed Feb. 19, 1969, Ser. No. 800,608
Int. Cl. B65h *17/36*
U.S. Cl. 226—127 **6 Claims**



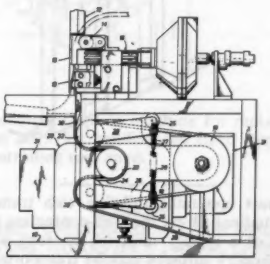
A cable feed device for facilitating longitudinal movement of a cable into a bore whereby a gripping device is mounted on a pivotal lever for grasping a portion of the cable and easily pulling or pushing the cable in the desired direction. The gripping device comprises a split block member having one portion thereof movable for facilitating alternate gripping and releasing of the cable in order to permit a repetitious pivoting of the device for a substantially continuous pulling or pushing of the cable.

3,580,449
STOCK FEED APPARATUS
Michael J. Chaban, Jr., Wilbraham, Mass., assignor to Standard International Corporation, Andover, Mass.
Filed Oct. 11, 1968, Ser. No. 766,757
Int. Cl. B65h *17/36*
U.S. Cl. 226—150 **13 Claims**



Stock-feeding apparatus of the intermittent reciprocating type having a simplified four-way valve for positive control of the sequencing of the apparatus. Particular features include a pressure-operated momentum-absorbing device and a practical simplified stock-release means.

3,580,450
GRIPPING MEANS FOR BINDING MATERIALS
Derick A. Sparks, Woodley, near Reading, England, assignor to Power Industries Limited, Maidenhead, England
Filed Aug. 16, 1968, Ser. No. 753,240
Int. Cl. B65h *17/24*
U.S. Cl. 226—171 **2 Claims**



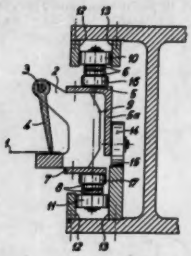
In a package-binding machine, a feed-drive device comprises an endless belt arranged to run on a plurality of pulleys or rollers, and guide means to pass binding material in running engagement between the belt and the surface of one of the pulleys or rollers, whereby a tension applied to the belt acts to grip binding material between the belt and the pulley or roller, and operation of drive means causes lengthwise feeding movement of the binding material.

3,580,451

CLAMP BLOCK CHAIN FOR HOLDING ONE EDGE OF A WEB OF MATERIAL

Raimund Fraitzl, Tengling, Upper Bavaria, Germany, assignor to Bruckner-Maschinenbau Gernot Bruckner, Tittmong, Upper Bavaria, Germany

Filed Sept. 18, 1969, Ser. No. 859,027
Claims priority, application Germany, Oct. 8, 1968, G6801212.4
Int. Cl. B65h 17/34
U.S. Cl. 226—173 4 Claims



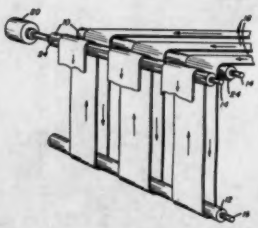
A clamp block chain comprises a series of clamp blocks, interconnected to form a chain, for holding one edge of a web of material. A series of upper rollers and a series of lower rollers are mounted on the chain to rotate on vertical axes. The upper rollers run between an upper pair of vertical guides, and the lower rollers run between a lower pair of vertical guides. A series of supporting rollers, mounted on the chain, rotate on horizontal axes, and there is a horizontal rail on which the supporting rollers run.

3,580,452

WEB TRANSPORT APPARATUS

Thomas A. Chuhta, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 15, 1969, Ser. No. 791,375
Int. Cl. B65h 17/20
U.S. Cl. 226—191 10 Claims



Web transport apparatus utilizing web transport rollers having a longitudinal rib on the web-contacting surface. The rib is formed of a spongy material whereby a plurality of webs having slippery surfaces may be transported simultaneously in parallel paths with good tracking characteristics.

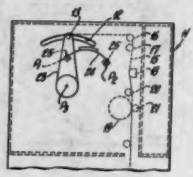
3,580,453

TENSION ARM

Robert E. Schoeneman, East Setauket, N.Y., assignor to Potter Instrument Company, Inc., Plainview, N.Y.

Filed Oct. 8, 1969, Ser. No. 864,811
Int. Cl. B65h 23/10
U.S. Cl. 226—195 1 Claim

An improved magnetic tape transport has a pivoted tension arm to which is attached a constant-tension flexure spring that is attached to the arm and the chassis so that a line through the points of attachment and the tape path are substantially parallel, thus maintaining a constant tape tension for all positions of the arm.

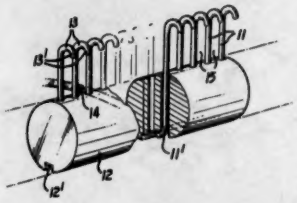


3,580,454

YARN GUIDE

Raymond Victor Evans, Blackburn, England, assignor to Singer-Cobble Limited, Blackburn, England

Filed Jan. 9, 1969, Ser. No. 790,034
Claims priority, application Great Britain, Jan. 9, 1968, Aug. 8, 1968, 1354/68;37831/68
Int. Cl. B65h 57/16
U.S. Cl. 226—198 8 Claims



A yarn guide comprises two or more closely spaced guide elements which define yarn-receiving pockets between successive such elements, the pockets being limited at the one end by a body part on which the elements are mounted and at the other side by a displaceable retention member. The retention member will usually be formed integrally with the related guide element and will be such as to be displaceable by a yarn moving transversely of its length into engagement with the pocket but relatively nondisplaceable by a yarn moving transversely of its length and outwardly of the pocket. The guide elements may be elongated in the direction of the yarns to be separated thereby to form plates between adjacent such yarns or they may take the form of pinlike members having not substantial length in the yarn direction.

3,580,455

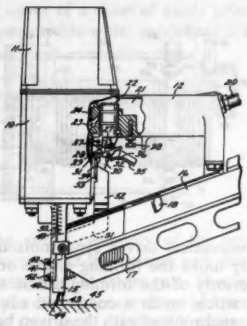
FASTENER DRIVING DEVICE OPERATING MEANS

Adolf Cast, Oberlenningen, and Heinz Schwarz, Zizishausen, Germany, assignors to Karl M. Reich Maschinenfabrik, Nurtingen, Germany

Filed Mar. 21, 1969, Ser. No. 809,064
Int. Cl. B27f 7/14
U.S. Cl. 227—8 23 Claims

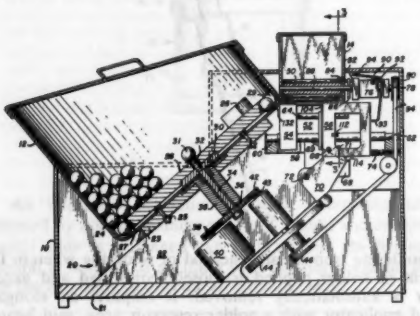
A powered fastener driving device having a power control means for selectively supplying power to a driver blade which drives fasteners out of the device, which power control means includes a member movable between a first position where no power is supplied to the driver blade and a second position where power is supplied to cause the driver blade in the device to drive a fastener, said control means including a counterreturn chamber therein which prevents said movable member from returning from said second position until after a predetermined lapse of time after the member is moved to said second position from said first position, and a cross-member pivotally mounted at its midpoint on said movable

member and arranged with a manually operated trigger and a slidable workpiece touch-member which extends slightly beyond the front end of the nose piece of the device to cause



the movable member to said second position when the trigger is pulled and the touch-member is moved rearwardly by engaging said device nose piece to the workpiece.

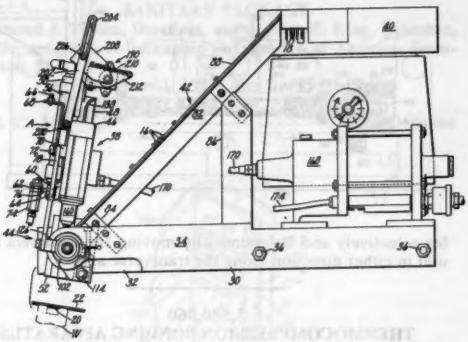
3,580,456
APPARATUS FOR INSERTING STICKLIKE OBJECTS INTO COMESTIBLE ARTICLES
Karl J. Zueger, 9 Shon Cr., Novato, Calif., and Eugene J. Decker, 514 Flagg St., San Jose, Calif.
Filed Oct. 9, 1969, Ser. No. 865,080
Int. Cl. B27f *7/02*
U.S. Cl. 227—100 **20 Claims**



Apparatus for inserting toothpicks, or the like, into comestible articles such as hors d'oeuvres, diced cheeses or meats, bar fruits and similar articles including a suitable conveyor means for individually positioning the articles to be impaled relative to an impaling means, a container for storing the toothpicks or other objects with which the comestibles are to be impaled and impaling means operatively coupled to the conveyor means for retracting one or more of the impaling objects from the container and causing it to be driven into a comestible article to form the desired food preparation.

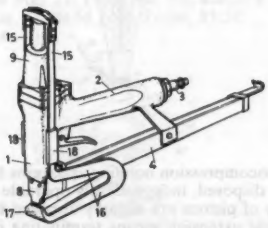
3,580,457
FASTENER INSERTING MACHINES
James N. Henshaw, Birmingham, Mich., assignor to USM Corporation, Flemington, N.J.
Filed May 15, 1969, Ser. No. 824,946
Claims priority, application Great Britain, June 26, 1968, 30358/68
Int. Cl. B21j *15/10*
U.S. Cl. 227—116 **9 Claims**

A machine for successively installing fasteners, especially the pull-to-set-type blind rivet-mandrel assemblies, wherein the fasteners are fed uniformly oriented in a vertical plane from a source of supply to a pickoff locality. An installing head is reciprocable in a parallel plane between a fastener inserting locality and a retracted fastener receiving position,



and a transfer device is operative between the pickoff locality and the receiving position successively to reorient and present the fasteners for insertion by the head in a work piece or work pieces.

3,580,458
COMPRESSED AIR STAPLING MACHINE FOR METALLIC STAPLES WITH CONTROL OF THE ANVIL FOR BENDING THE STAPLE ENDS
Umberto Monacelli, Via del Parco, Biassono (Milan), Italy
Filed July 14, 1969, Ser. No. 841,216
Claims priority, application Italy, July 19, 1968, 19,179
Int. Cl. B25c *5/02*
U.S. Cl. 227—124 **5 Claims**

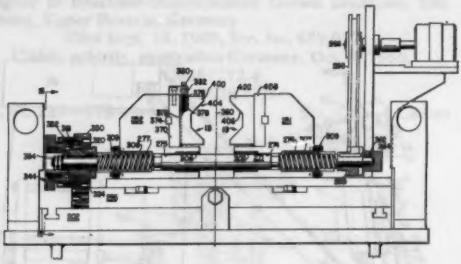


A compressed air stapling machine for metal staples provided with an anvil for bending the fixed staples ends and means for controlling said anvil.

3,580,459
VARIABLE POSITION MEANS FOR HOLDING A NONROTATING WORKPIECE IN FRICTION WELDING APPARATUS
Arthur F. Gage, Warren, and Alex F. Stamm, Rochester, Mich., assignors to Rockwell-Standard Company, Pittsburgh, Pa.
Filed Oct. 23, 1968, Ser. No. 769,964
Int. Cl. B23k *27/00*
U.S. Cl. 228—2 **14 Claims**

Friction welding apparatus including a pair of members having transversely facing workpiece engaging surfaces thereon for holding a nonrotating workpiece and adjusting means for varying the positions of the members relative to each other and a machine support. The adjusting means includes transverse adjusting means for selectively and inde-

pendently moving the members toward or away from each other along an axis transverse to the normal welding axis and



for selectively and independently moving the members as a unit in either direction along the transverse axis.

3,580,460

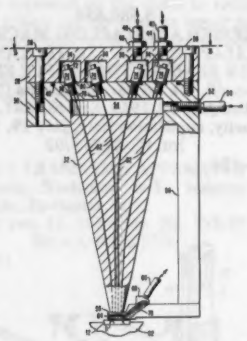
THERMOCOMPRESSION BONDING APPARATUS

Lewis D. Lipschutz, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 26, 1968, Ser. No. 747,940

Int. Cl. B23k *1/00, 37/04*

U.S. Cl. 228—4 **6 Claims**



A thermocompression bonding apparatus having a plurality of slidably disposed, independently operable impact surfaces. A plurality of pistons are slidably disposed in a housing, and each include extension means terminating in respective impact surfaces. The pistons are actuated so as to urge the impact surfaces into an impact zone so as to affect a plurality of thermocompression bonds.

3,580,461

METHOD AND APPARATUS FOR MAKING ELONGATED VESSELS, CONTAINERS AND TUBULAR MEMBERS

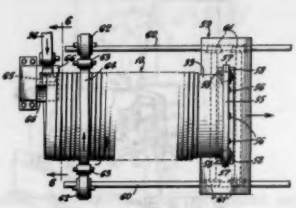
Curzon Dobell, Nassau, Bahamas, and Leslie P. Wilson, London, England, assignors to Caribbean Holdings Ltd., Nassau, Bahamas

Division of Ser. No. 341,835, Jan. 24, 1964, Pat. No. 3,425,118, Feb. 4, 1969. This application June 6, 1968, Ser. No. 753,316

Int. Cl. B23k *1/20*

U.S. Cl. 228—15 **17 Claims**

Method and apparatus for forming elongated hollow pressure-resistant cylindrical articles from a continuous strip of prestressed and pretensioned material wherein the strip of material is laid down in a plurality of helical windings which may overlap or abut each other by the application of a rotative force; the windings are sealably bonded as laid down; and the forming cylindrical article is displaced axially by a force separate from the rotative force to lay down the windings until the desired length of article is formed. The apparatus embodies fixed arcuate segments or rotatable cylindrical forming heads to shape the cylindrical articles from the strip; driven endless belt assemblies to rotate the forming article; and mechanical drives synchronized with the driven belt to axially move the forming article or pressurized fluid supplied interiorly of the forming article to axially displace the forming article under a controlled advance by mechanical linkages synchronized with the driven belt assembly.



3,580,462

SOLDERING APPARATUS

Louis Vanyi, 246 Crestwood Ave., Ventura, Calif.

Filed Dec. 14, 1967, Ser. No. 690,590

Int. Cl. B23k *3/02*

U.S. Cl. 228—51 **16 Claims**

A soldering iron tip and method of soldering wherein the amount of solder applied is closely controlled and excess solder is automatically removed. It employs an elongate heated applicator with a solder reservoir area, said heated applicator having a plurality of small apertures on its work contacting face each leading to the reservoir area. In one embodiment the tip is made up of a bundle of rigid rods encased in a sleeve, the rods terminating substantially even with the end of the sleeve and the tip end being shaped to contact the work. It employs capillary attraction to apply solder and to draw excess solder off of a workpiece and into the reservoir area. When the reservoir is full of brief shake will dislodge accumulated solder from the reservoir and clear it for future use.

3,580,463

PACKAGE FOR SOLID PIECES OF FOODSTUFFS OR THE LIKE AND METHOD FOR MANUFACTURING SUCH PACKAGES

Steven Duerink, 14, Mussenstraat, Uden, and Leendert Steinvoort, 9, Prof. Regoutstraat, Best, Netherlands

Filed Mar. 19, 1969, Ser. No. 808,436

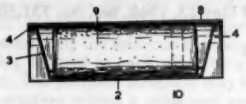
Claims priority, application Netherlands, Mar. 20, 1968, 68 03956

Int. Cl. B65d *1/00, 85/00*

U.S. Cl. 229—2.5 **11 Claims**

A package characterized in that it has a substantially rectangular bottom having only at two opposite ends an up-

standing wall part, said wall parts having along their outer periphery in the zones where these wall parts are not connected to the bottom part, a flange, the generating lines of which flanges are parallel to the main surface of the bottom part and that to the flanges of the upstanding wall parts a separate closing cover of a sheet of easily printable material such as hard paper or thin white cardboard is applied which



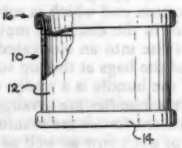
extends along the entire periphery of the upstanding wall parts with the exception of the bottom part and has generating lines also parallel to the bottom part. This makes it possible to use a simple closing cover from a flat sheet, for instance of paper or thin white cardboard, which can easily be printed and given an attractive appearance and the foodstuffs can be displayed for sale in the package in such a way that substantially only the closing cover is visible.

3,580,464

HERMETICALLY SEALED COMPOSITE CONTAINER

Edwin D. Griffith, Pemberville, Ohio, assignor to Owens-Illinois, Inc.

Filed Mar. 17, 1969, Ser. No. 807,601
Int. Cl. B65d *3/10, 5/02*
U.S. Cl. 229—5.6 **4 Claims**



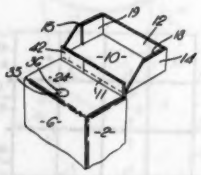
An improved hermetically sealed composite container formed by double seaming a pair of heated and compounded metal ends to a flanged can body so that the heated compound is bonded to an inner liner of thermoplastic material on the can body to provide an effective seal.

3,580,465

CARTONS

Kenneth Knapton Davies, Chorleywood, England, assignor to The Metal Box Company Limited, London, England

Filed Sept. 25, 1968, Ser. No. 762,598
Claims priority, application Great Britain, Sept. 29, 1967, 44528/67
Int. Cl. B65d
U.S. Cl. 229—14 **6 Claims**



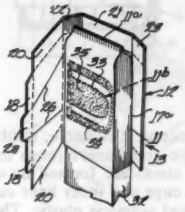
A carton having a lid hinged to the rear wall and arranged to cover the mouth and parts of the front and sidewalls of the carton is provided with an internal tubular liner an end portion of which is bellows folded and overlies a closure panel infolded from the top of the front wall of the carton, and the top of the lid, when closed, overlies the bellows folded portion of the liner and the closure panel and lies in a plane substantially at right angles to the sides of the body.

3,580,466

SANITARY PACKAGE

Edmund J. Thelen, Deerfield, and Robert H. King, Evanston, Ill., assignors to Packaging Corporation of America, Evanston, Ill.

Filed Jan. 31, 1969, Ser. No. 795,647
Int. Cl. B65d *5/56, 17/00*
U.S. Cl. 229—14 **5 Claims**



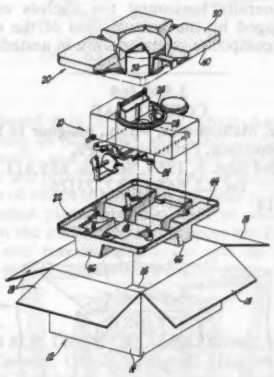
A sanitary package is provided with a reclosable cover to facilitate dispensing of a product therefrom. The package includes a foldable outer carton having a reclosable cover defined on the top panel thereof and a sealed product-accommodating bag disposed within the carton and affixed thereto.

3,580,467

CARBURETOR PACKAGE

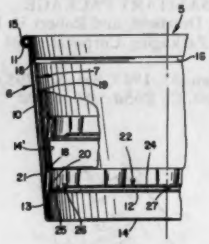
Franklin B. Pieszak, Grosse Pointe Woods, and Marvin G. Knaggs, Livonia, Mich., assignors to Carroll Plastics Corporation, Detroit, Mich.

Filed May 21, 1969, Ser. No. 826,318
Int. Cl. B65d *5/58, 81/06, 85/30*
U.S. Cl. 229—14 **15 Claims**



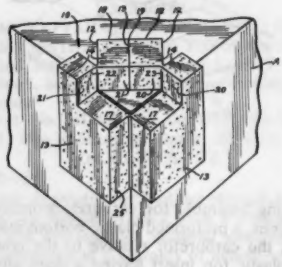
A packaging assembly for carburetors including a cardboard container, a preformed plastic bottom insert to receive and support the carburetor relative to the container and a preformed plastic top insert having a deep annular depression terminating in an annular surface which engages the carburetor air cleaner seat to seal the carburetor and restrain it within the container.

3,580,468
NESTABLE DOUBLE-WALLED DISPOSABLE CONTAINER
James A. McDevitt, Kalamazoo, Mich., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Aug. 5, 1969, Ser. No. 847,561
Int. Cl. B65d *15/02, 3/22*
U.S. Cl. 229—14 **5 Claims**



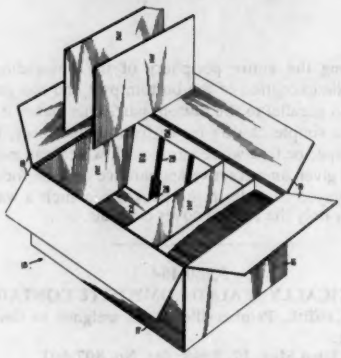
Composite frustoconical nestable, double-walled, disposable (i.e. inexpensive) containers (cups in the smaller sizes, tubs in the larger sizes) are formed by combining conventional outer paper cups and inner liner cups formed of thin-walled thermoformed seamless plastic. The outer paper cups have plain or straight (i.e. uninterrupted) sidewalls from top to bottom with outwardly curled rims or lips at the top and recessed bottoms resulting in a continuous rim at the bottom of each cup. The plastic inner liner cups also have frustoconical sidewalls which are somewhat smaller than the sidewalls of the outer paper cups so as to leave in each cup a space between the interfitting sidewalls. Each inner liner has a rim or lip at the top which is curled over, around and under the rim of the outer paper cup so as to snugly embrace the same. A short distance below the rim each plastic inner liner has a continuous, inwardly opening, circumferential lid-receiving groove, the outer periphery of which engages the surrounding inner surface of the sidewall of the outer paper cup so as to act as a spacer between the sidewalls. Adjacent the bottom of each inner liner cup there is a series of circumferentially spaced stacking indentations integrally formed partially in the lower sidewall and partially in the bottom of the liner cup. The segments of the sidewall intermediate the stacking indentations flare outwardly in respect to the frustoconical sidewall so as to join the liner bottom in circumferentially spaced arcuate corners which rest and engage in the continuous circumferential inner corner formed between the bottom and sidewall of the outer paper cup. The stacking indentations have generally horizontal top shelves or shoulders which are engaged by the bottom rims of the outer paper cups when the composite containers are in nested condition.

3,580,469
CORNER PAD
Larrie S. Reese, Mahtomedia, Minn., assignor to Logistics Industries Corporation, Philadelphia, Pa.
Filed Sept. 8, 1969, Ser. No. 855,811
Int. Cl. B65d *5/62, 25/26*
U.S. Cl. 229—14 **10 Claims**



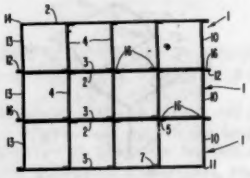
A corner pad for use in packaging fragile articles. The pad is formed from yieldable material and formed in a blank of solid rectangular configuration. It can be conveniently shipped and stored in this form. Immediately prior to use the blank is "popped" or setup for placement into engagement with the corner of the fragile article.

3,580,470
CONTAINER FOR PACKING BAGS
Edwin Clifton Leonard, Richmond, Va., assignor to Eskimo Pie Corporation, Richmond, Va.
Filed May 23, 1968, Ser. No. 731,507
Int. Cl. B65d *3/24, 5/48*
U.S. Cl. 229—15 **11 Claims**



The present invention involves a method of packaging flat bags for shipment and a shipping container for the bags. The bags have a folded bottom end which is substantially thicker than the open top end. In the disclosed method a number of bags are arranged flatwise into an elongated bundle with the thicker bottom ends of the bags at the top so that the longitudinal cross section of the bundle is a wedge shape that is narrower at the bottom, the bundles are arranged side-by-side in rows and inwardly directed forces are maintained on the supporting end surfaces of each row as well as against the sides of each row. The shipping container comprises an outer casing having end, side and bottom walls in which is inserted a packing insert having a pair of inclined wedging panels that extend between the casing end walls and are inclined outwardly and upwardly from a location on the casing bottom wall spaced inwardly from the bottom of the casing sidewalls. The upper portion of the wedging panels contact the upper portion of the casing sidewalls to form a wedgelike compartment for containing rows of bags stacked in fanlike bundles and locking tabs extend between the lower portion of the inclined wedging panels and the casing sidewalls.

3,580,471
COLLAPSIBLE CELLULAR BOX PARTITIONS
William R. Burke, and Frank S. McCall, Savannah, Ga., assignors to Union Camp Corporation, New York, N.Y.
Filed June 24, 1968, Ser. No. 739,300
Int. Cl. B65d *5/48, 85/00*
U.S. Cl. 229—15 **1 Claim**



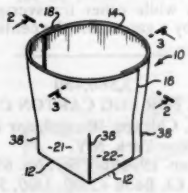
A collapsible cellular partition unit is formed by spacing parallel sheets and locating therebetween parallel, longitu-

dinally extending wall sheets, each wall sheet having one longitudinal edge secured to one spaced sheet and the other edge secured to the other spaced sheet. For the continuous manufacture of such units, the spaced sheets are formed by two moving webs to which longitudinal glue lines are applied. The wall sheets are formed by webs moving between and with the first webs. The wall sheet webs are slit from a single stock roll and are scored to form longitudinal flaps to adhere to the glue lines on the respective first two webs. The first two webs are scored to form the outer wall portions of the partition unit. A partition structure of desired size may be built up by assembling the required number of partition units, the units being secured to each other by glue areas on their spaced sheets. The partition structure may then be secured in a collapsed position within a collapsed container and both shipped as an integrated package unit for simultaneous setup.

3,580,472
SWAB DISPENSER FOR PACKAGE THEREFOR
Theodore H. Stawski, Union, N.Y., assignor to Becton, Dickinson and Company, Rutherford, N.J.
Filed June 10, 1969, Ser. No. 831,929
Int. Cl. B65d *5/72*
U.S. Cl. 229—17 **6 Claims**

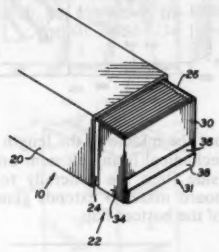
A portable dispensing apparatus for dispensing a sterile unpackaged medical swab and a moisturizing charge of a liquid medium. A package member for storing the swab as one of a plurality of stacked swabs. The package, received and supported by the apparatus, having bottom supporting structure for the swabs and both a rear cutout to allow passage of a pivotal dispensing lever and a front exit to dispense, upon lever movement, the swab from the package and from an aligned dispensing slot in the apparatus.

3,580,473
PAPER BOARD CONTAINER WITH PLATFORM STYLE BOTTOM
Lester D. Gill, 302 North Road, Kinnelon, N.J.
Filed Feb. 6, 1969, Ser. No. 797,111
Int. Cl. B65d *3/08*
U.S. Cl. 229—21 **16 Claims**



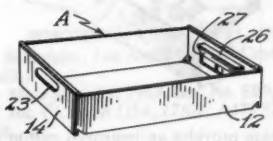
A merchandising container of paperboard or nonmetallic sheet material made from a blank that provides a platform bottom of polygonal shape and sidewalls that change to a top edge that is circular, oval, or at least more circular than the bottom. Panels fold back on themselves to hold the bottom at a level above the bottom of the sidewalls. The preferred shape of the bottom is square and this makes a particularly effective blank that can be supplied flat and set up on a filling machine at a user's factory. A laminate blank can provide a moisture and vaporproof container.

3,580,474
CONTAINER-MAGAZINE FOR DISPENSING LABELS
Emile L. Provost, New York, and Antonio Tomasello, Yonkers, N.Y., assignors to Gellman Industries, Inc., New York, N.Y.
Filed Aug. 5, 1968, Ser. No. 750,345
Int. Cl. B65d *5/38, 5/72*
U.S. Cl. 229—20 **5 Claims**



An elongated unitary container-magazine for dispensing folded labels having at least one flap, and a nonunitary container-magazine comprising an outer box and an inner box for the same purpose. The invention also includes patterns for forming the foregoing container-magazines.

3,580,475
STACKING TRAYS
Odess V. Mobley, Birmingham, Ala., assignor to Hoerner Waldorf Corporation, Ramsey County, Minn.
Filed Oct. 14, 1969, Ser. No. 866,210
Int. Cl. B65d *5/22*
U.S. Cl. 229—34 **8 Claims**

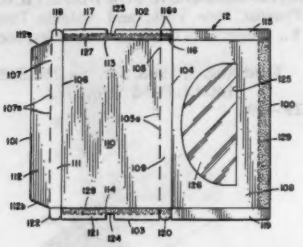


A paperboard tray is provided which has opposed end walls including an outer end wall panel, corner flaps hinged to the sidewalls, and an end wall liner panel. The end wall liner panels are provided with a pair of hingedly connected flanges, one of which is hinged to the liner panel and extends on a horizontal plane, and the other of which engages an abutment on the corner flaps to support the first flange. The bottom of one tray is adapted to rest on the horizontal flanges of a similar tray for stacking purposes.

3,580,476
CARTON FOR USE WITH PACKAGING APPARATUS
Lester E. Cannon, Chicago Heights; John M. Tindall, Wilmette, and Howard N. Taylor, Chicago Heights, all of, Ill., assignors to Folding Cartons, Inc., Melrose Park, Ill.
Continuation-in-part of application Ser. No. 685,140, Nov. 22, 1967, now Patent No. 3,474,594. This application Oct. 23, 1969, Ser. No. 868,738
Int. Cl. B65d *5/02*
U.S. Cl. 229—37 **6 Claims**

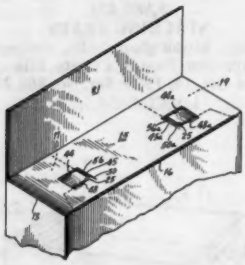
A carton for use with packaging apparatus for packaging food products and the like. The carton is formed of flexible board material and includes rectangular top, bottom, and sidewalls, the end portions of which are provided with fold

lines defining top, bottom, and side flaps. The fold line between the bottom wall and one of the sidewalls is provided with spaced-apart cut slots therealong to facilitate the folding of the carton. Each of the bottom flaps is provided with a rectangular notch extending inwardly from the free edge of



the flap at about the middle of the length thereof for accommodating a mechanical lifting element on the packaging apparatus. The side flaps are generally rectangular, and the grain of the board material extends generally parallel with the free edge of the bottom flap.

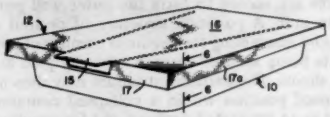
3,580,477
RECTANGULAR CARTON HAVING SIFT-PROOF AND SQUARING CLOSURE
Albert L. Roth, 11 Bradley Court, Spring Valley, N.Y.
Filed Mar. 17, 1969, Ser. No. 807,556
Int. Cl. B65d *5/10*
U.S. Cl. 229—39 **7 Claims**



The invention provides an improved carton for powdered materials and the like, of rectangular or square shape, which has a top or bottom closure of inwardly foldable flaps, and preferably both, wherein the inwardly foldable flap on the rear wall of the carton is provided with two cutout portions each having a side edge which is engaged by a tongue provided on the sidewall flap so as to maintain the carton in squared condition; and at the same time such cutouts each have an oblique angled portion which permits one of said tongues to be interlocked therewith, so that the extension members on the rear wall and sidewalls may be readily glued or sealed to the flap on the front wall of the carton to provide a squared and sealed carton ready for shipping, stacking and display purposes.

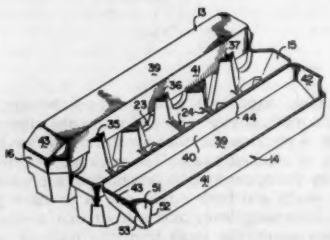
3,580,478
PACKAGING
Robert P. Bemiss, Hillsborough, Calif., assignor to Alexander Donald, San Francisco, Calif., a part interest
Filed July 24, 1969, Ser. No. 844,494
Int. Cl. B65d *5/64, 43/00*
U.S. Cl. 229—43 **12 Claims**

The carton and package provides for a new type of closure which may take several different forms, each of which incorporates a coated paperboard lid having a heat-sealable plastic coating such as polyethylene for example. Wherein a 180° bend is made to provide an outer edge of the lid which is heat-sealed together to provide strength to support a divergent flange or edge which is used in accomplishing a closing and/or sealing of the carton or package. In one form, this edge provides a snap-on operation for mechanically securing the lid on a tray by an interlocking relation between the horizontal flange on the top of the tray and the lid.



In another form of the invention, to provide the mechanical securing the edge of the lid is heat-sealed to the underside of the lip of the tray while the body of the paperboard lid is being heat-sealed on the top side of the lip of the tray. In both instances, an adhesive seal is used in addition to the heat seal which melts at temperatures below 212° F. and preferably at about 170°—180° F.

3,580,479
MOLDED PULP EGG CARTON
Arthur J. Weiss, Bergenfield, N.J., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Aug. 29, 1966, Ser. No. 576,511
Int. Cl. B65d *5/66, 1/00*
U.S. Cl. 229—44 **9 Claims**

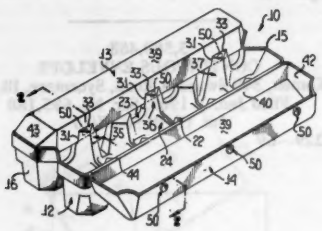


This disclosure relates to an egg carton or the like formed of a plurality of transverse pairs of pockets for receiving eggs, and a pair of covers for closing a body of the carton. Adjacent end panels of the covers are provided with concave, triangular recesses for facilitating the introduction of a person's fingers between the covers to readily open the same. The carton is preferably of a molded pulp construction, and bottom walls of at least selected ones of the pairs of compartments are rigidified by a wall bridging a longitudinal centerline of the carton while other transverse pairs are spaced from one another by a gap across the centerline.

3,580,480
LOCK FOR EGG CARTON COVER
Richard P. French, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Jan. 19, 1968, Ser. No. 699,086
Int. Cl. B65d *45/00, 1/00, 5/48*
U.S. Cl. 229—45 **7 Claims**

This invention is directed to an egg or similar type carton which includes a carton body and a pair of covers for opening and closing an end of the body opposite a bottom wall thereof. Each of the covers includes a pair of locking panels which are normally disposed in side-by-side relationship along a centerline of the carton body in a closed position of the covers. The locking panels are received in slots of up-

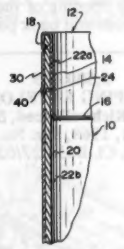
wardly directed posts, and bosses are formed from the material of the locking panels for engagement beneath associated edges of the slots to interlock the covers therewith in the closed position.



3,580,481
EASY OPENING ARRANGEMENT FOR RECLOSABLE CAN

Melvin A. Koboldt, St. Louis, Mo., assignor to Container Corporation of America, Chicago, Ill.

Filed Jan. 27, 1969, Ser. No. 794,114
Int. Cl. B65d *3/10, 17/06*
U.S. Cl. 229—51 **1 Claim**

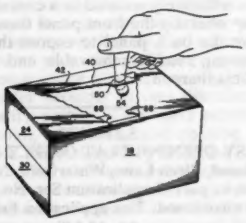


A reclosable fiber can having body wall sections separated by a cut, an outer label, a pull element between the label and body located over the cut, wherein said label is secured to the outer surface of the body except in the marginal areas on opposite sides of said cut.

3,580,482
LATCH FOR RECLOSABLE CARTON AND BLANK THEREFOR

Richard F. Witte, Henrico, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Feb. 17, 1969, Ser. No. 799,760
Int. Cl. B65d *5/54, 17/00*
U.S. Cl. 229—51 **12 Claims**

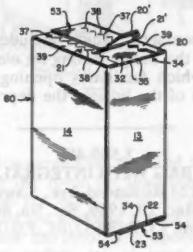


A latch for a reclosable carton construction and blank therefor wherein means are provided to engage a reclosable tab on a male locking member so as to resist its natural tendency to spring back when it is in its locked position. In the preferred form of the invention, the female locking member as well as the means to prevent spring back of the male locking member are each formed in a conventional glue line panel. The male and female locking members are so positioned and arranged in an overlapping relationship that the male locking member snaps into its locked position. A novel pushbutton-type unlatching member is provided integral with a male locking member to reopen the closed carton.

3,580,483
MEMBRANE SEALED CARTON

Chauncey Young, St. Louis, Mo., assignor to Riegel Paper Corporation, New York, N.Y.

Filed Feb. 20, 1969, Ser. No. 800,866
Int. Cl. B65d *5/54*
U.S. Cl. 229—51 **8 Claims**

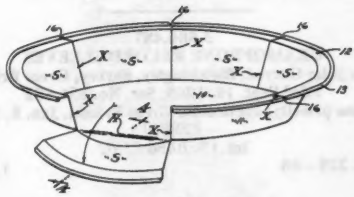


The disclosure relates to improvements in tear opening structures for end filled, end sealed cartons and, more specifically, to an improved opening structure for membrane sealed cartons of the type in which a separate "safety shield" material of polyethylene coated glassine or the like is heat sealed or otherwise tightly secured to the outfolded end flaps and side flaps of a carton prior to the infolding and adhering of at least a pair of said flaps to one another to complete the end structure.

3,580,484
PORTION ACCESS PIE PLATE

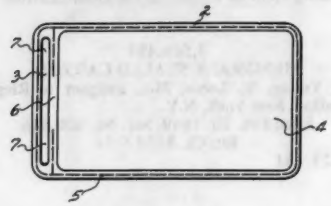
Michael S. Schneider, Los Angeles (5755 Cantelope Ave., Van Nuys, Calif.)

Filed Mar. 24, 1969, Ser. No. 809,573
Int. Cl. B65d *1/34, 17/02;* **A47j** *37/01*
U.S. Cl. 229—5! **4 Claims**



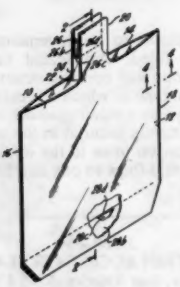
This invention relates to edible pies that are baked in plates and then cut into segmental portions and removed from the plate as individual servings, provision being made for gaining access to and to loosen each portion of pie in order to avoid mutilation thereto, and involving lines of weakening extending radially of the plate so as to define segments and specifically through the side and rim of the plate, whereby segmental sections of the side and rim are hinged and depressable for exposing cut portions of pie and for having a lever action that lifts and loosens the pie, thereby facilitating extraction of pie portions from the plate without mutilation.

3,580,485
CONTAINERS
Robert Leonard Hall, Streatham, London, England, assignor to Monsanto Chemicals Limited, London, England
Filed May 7, 1969, Ser. No. 822,482
Claims priority, application Great Britain, May 28, 1968, 23,848/69
Int. Cl. B65d *43/02*
U.S. Cl. 229—51R **3 Claims**



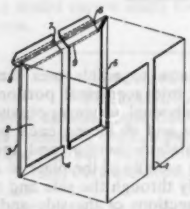
A packaging container which includes a flanged body sealed with a lid, the flange having an elongated depression formed therein which facilitates opening the container by pressing a portion of the lid into the depression to puncture it.

3,580,486
PLASTIC BAG WITH INTEGRAL HANDLE
Emanuel Kugler, 124 Richmond Ave., Lawrence, N.Y.
Filed Mar. 19, 1969, Ser. No. 808,581
Int. Cl. B65d *31/08, 33/10*
U.S. Cl. 229—54 **3 Claims**



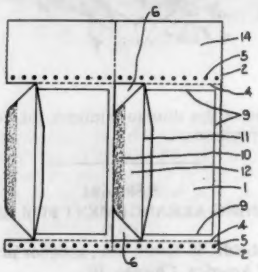
A plastic bag having an integral straplike handle at its upper end and having a bottom gusset or satchel bottom construction which unfolds under the weight of items carried in the bag into a three dimensional configuration.

3,580,487
GRAMOPHONE RECORD SLEEVES
Norman John Garrod, Bletchingley, Surrey, Great Britain
Filed Sept. 10, 1969, Ser. No. 856,682
Claims priority, application Great Britain, Jan. 8, 1969, 1200/69
Int. Cl. B65d *81/02*
U.S. Cl. 229—68 **11 Claims**



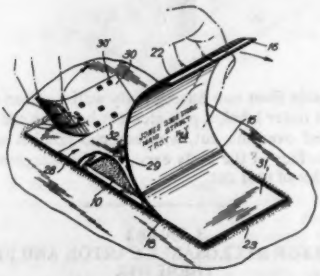
A gramophone record sleeve comprising two side members interconnected along three edges by spines, the fourth edge of the sleeve being closable by a closure flap integral with one side member and pivotal along a hinge line in the one side member parallel to but spaced inwardly of the fourth sleeve edge.

3,580,488
CONTINUOUS ENVELOPE
Stanley Komen, 348 Swanson Road, Sycamore, Ill.
Filed Jan. 2, 1968, Ser. No. 695,188
Int. Cl. B65d *27/10*
U.S. Cl. 229—69 **6 Claims**



A continuous envelope system in which a plurality of joined envelopes are made from a single web of sheet material, each of the envelopes has hinged joints at the three closed sides thereof so that full opening of the envelope is attained upon spreading of the front and back panels.

3,580,489
SHIPPING ENVELOPE
Joseph S. Oettinger, 21 Richwell Road, Scarsdale, N.Y.
Filed Aug. 1, 1969, Ser. No. 846,730
Int. Cl. B65d *27/02*
U.S. Cl. 229—70 **3 Claims**

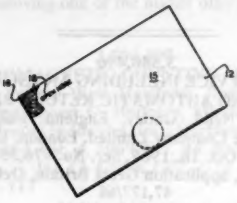


A shipping envelope having a front and back panel, the latter having an aperture to expose a portion of the surface of a shipping ticket contained in the envelope so that the back of the envelope and the exposed surface of the shipping ticket can be adhesively secured to a container, the envelope having means whereby the front panel thereof can readily be stripped from the back panel to expose the shipping ticket, the latter having readily removable end portions carrying shipping indicia thereon.

3,580,490
EASY OPENING FLAT OBJECT MAILER
Robert B. Shaad, Birch Lane, Watertown, N.Y.
Continuation-in-part of application Ser. No. 804,817, Mar. 6, 1969, now abandoned. This application Feb. 20, 1970, Ser. No. 13,149
Int. Cl. B65d *65/32, 3/26*
U.S. Cl. 229—92.9 **1 Claim**

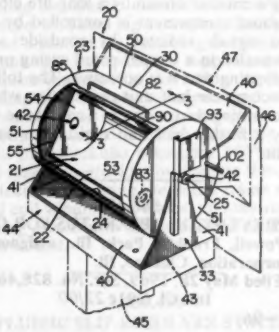
A mailer for small flat objects, adapted for insertion in an envelope, comprises a rectangular cardboard blank having a

scored median foldline dividing the blank into a pair of rectangular panels. One side of the blank is coated with an adhesive having the property of bonding the panels together when the blank is folded, the panels being readily pulled



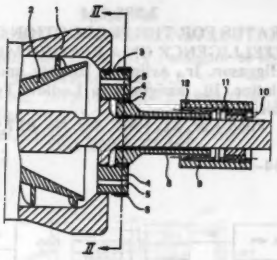
apart again. One corner of the blank is cut away along a convexly curved line leaving the corner of one of the folded panels projecting so that it may be pushed back exposing a small area of the deformed corner for grasping the deformed corner for easy opening.

3,580,491
MAILBOX
Ray J. Campbell, R.R. 1, Ansonia, Ohio
Filed Aug. 23, 1968, Ser. No. 754,846
Int. Cl. A47g *29/12*
U.S. Cl. 232—35 **10 Claims**



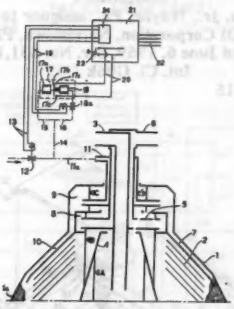
A mailbox of simple and economical construction is provided which is easy to open with one hand and is self-closing. The mailbox has a stationary inner container provided with a first opening therein and an outer member rotatably supported around the inner container and having a second opening provided therein and with the outer member having weight means thereon which is acted upon by gravity causing rotation of the outer member in one direction about the inner container until a portion of the outer member is aligned over the first opening with the second opening being angularly displaced from the first opening to define a closed position for the mailbox. The mailbox is easily opened by rotating the outer member in a direction opposite the one direction until the second opening is aligned over the first opening to provide unobstructed access to the interior of the inner container. The mailbox has a stop which limits rotation of the outer member in either direction and has a unique self-dropping signal flag which drops merely by opening the mailbox.

3,580,492
CENTRIFUGAL SEPARATOR WITH ADJUSTABLE OUTLET MEANS
Jan R. Schnittger, Saltsjobaden; Carl-Goran Nilson, Tulling, and Bengt D. R. Larsson, Tumba, all of, Sweden, assignors to Alfa-Laval AB, Tumba, Sweden
Filed Aug. 15, 1968, Ser. No. 752,860
Claims priority application Sweden, Aug. 23, 1967, 11779/67; 11780/67; 11781/67
Int. Cl. B04b *1/20*
U.S. Cl. 233—7 **13 Claims**



In a centrifugal separator of the kind having a conveyor screw arranged in the rotor for discharging sludge, or the like, separated from the liquid fed to the rotor, the overflow outlets for the liquid are movable between radially inner and outer positions while the rotor is in operation. For this purpose the overflow outlets are at least partly formed by separate members rotatable with the rotor but journaled for rotation relative thereto so as to effect such radial movements of the outlets, and means are provided for rotating all of the journaled members synchronously relative to the rotor and through the same angle.

3,580,493
METHOD AND APPARATUS FOR DETECTING SLUDGE LEVEL IN A CENTRIFUGE
Lars-Erik Jonsson, Tumba, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden
Filed Oct. 28, 1968, Ser. No. 770,977
Claims priority, application Sweden, Oct. 31, 1967, 14,886/1967
Int. Cl. B04b *11/02*
U.S. Cl. 233—19 **15 Claims**



A centrifugal rotor has a separating chamber with a sludge-collecting space and also has an indicating channel adapted for passage of an indicating liquid through its radially outer end which is positioned to be blocked by sludge collected to a predetermined level in the collecting space. To detect when the blocking occurs, the apparatus registers a reference pressure condition sensed at a certain point of the indicating channel in a first time period, and this reference pressure condition is compared with an indicating pressure condition

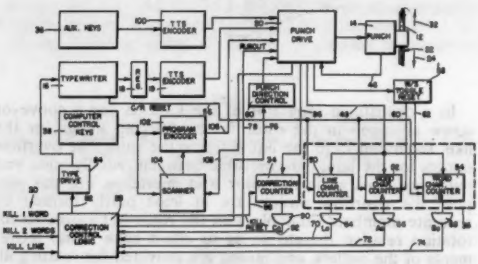
sensed at the same point in a second time period commencing after the beginning of the first time period, these registering and comparing operations being repeated until the difference between the compared pressure conditions acquires a predetermined value indicative of said blocking. The compared pressure conditions may be pressures prevailing at said point at instants constituting said first and second time periods, respectively, or they may be pressure changes sensed at said point during time intervals constituting said first and second time periods, respectively.

3,580,494

APPARATUS FOR THE PRODUCTION OF CODED INTELLIGENCE ON A RECORD MEDIUM

Frank G. Higgason, Jr., Arlington Heights, and Robert J. Sehnert, Palatine, Ill., assignors to Ludlow Typograph Company, Chicago, Ill.

Filed Apr. 21, 1969, Ser. No. 817,987
Int. Cl. G06k *1/02*
U.S. Cl. 234—6 **9 Claims**



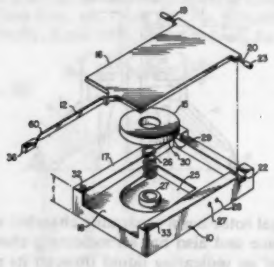
Apparatus produces coded intelligence on a record medium, such as by perforating a moving tape, and has a keyboard input. An error correction capability is provided which utilizes the input data, itself, such as the word spaces, to control the operation of the system for deletion of the unwanted data on the medium. A computer word program capability may also be provided for producing selected multicharacter instruction codes on the medium from a single key at the keyboard.

3,580,495

CODED PUNCH ELECTROMAGNETIC INTERPOSER ASSEMBLY

John Paul Jones, Jr., Wayne, Pa., assignor to Navcor, Inc., a Division of KDI Corporation, Norristown, Pa.

Filed June 6, 1969, Ser. No. 831,190
Int. Cl. G06k *1/05*
U.S. Cl. 234—115 **11 Claims**



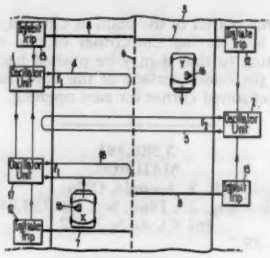
A miniaturized electromagnetic interposer assembly is described capable of high speed operation from electronic trigger pulses and having coil-interposer arrays of dimensions suitable for direct positioning alongside a set of standard paper tape punches stacked in parallel groups for ten punch positions per inch. An interposer member electromagnetically moved between two stable positions includes a semiflexible twisted leaf spring stiff in the direction of movement of an electromagnetically moved member and flexible in the direction of movement of punches in their cutting stroke. The interposers and a punch drive comb assembly attain side by side positions in a notch cut into the side of a punch pin shaft.

3,580,496

COUNTING DEVICE INCLUDING AN ESCAPEMENT WITH NO AUTOMATIC RETURN BIAS

Donald William Neild, Gatley, England, assignor to The General Electric Company Limited, London, England

Filed Oct. 18, 1967, Ser. No. 676,356
Claims priority, application Great Britain, Oct. 21, 1966, 47,177/66
Int. Cl. G08g *1/065*
U.S. Cl. 235—92 **6 Claims**



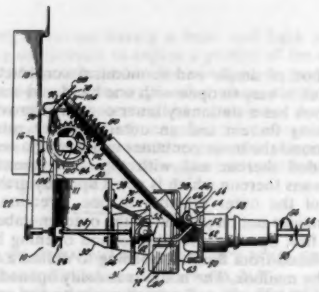
A counting device for use in a road toll charging or similar system having a counter driven by a long life clockwork-type mechanism whose escapement is controlled by input means responsive to signals radiated by roadside sources. The mechanism is sealed in a tamper-proof casing providing with means for indicating that it is operative. The toll system may produce an incomplete half unit registration when a vehicle carrying the counting device enters a road zone which unit is completed by a further half unit registration as the vehicle leaves the zone.

3,580,497

TAMPER PREVENTION APPARATUS FOR ODOMETER

Patrick L. Powell, Franklin Park, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed May 28, 1969, Ser. No. 828,486
Int. Cl. G01c *22/00*
U.S. Cl. 235—96 **20 Claims**



The following specification describes an arrangement for locking a counter or odometer on subtractive operation together with a clutch automatically operated on locking to

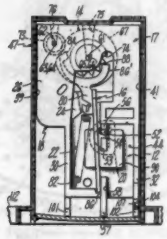
disengage the gear train and avoid damage to the train and effective on normal or additive operation to engage the gear train. A simple spring biased ratchet arrangement between one of the drive wheels and an adjacent higher digit order wheel is also used to permit additive operation and prevent subtractive counter or odometer operation. An additional feature provides a signal in the event of tampering with the odometer by moving one of the higher digit order dials.

3,580,498

ELECTROMAGNETIC COUNTING MECHANISM

Lloyd J. La Pointe, West Hartford; Howard J. Voegelin, Cheshire, and Ernest G. Hoffman, Middlefield, Conn., assignors to Veeder Industries, Inc., Hartford, Conn.

Filed Apr. 4, 1969, Ser. No. 813,490
Int. Cl. G06m *1/02, 1/10*
U.S. Cl. 235—117 **15 Claims**



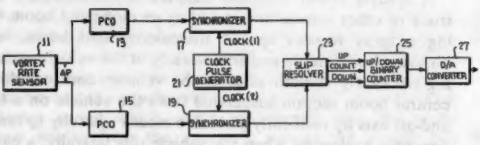
An electromagnetic counting mechanism having a one-piece molded plastic frame with a pair of elongated parallel end supports and an intermediate tubular connector extending transversely therebetween, an electromagnet comprising a coil encircling the tubular connector and a U-shaped magnetic core piece with one leg extending through the tubular connector and a second leg extending between the supports, a counter mounted between the supports, and a counter drive mechanism mounted on one of the supports in operative relationship with the electromagnet and counter for indexing the counter upon momentary energization of the electromagnet. The end supports of the frame are contoured to permit access to the tubular connector 360° thereabout and along its full length to provide for winding the coil about the tubular connector by treating the entire frame as a bobbin in conventional coil winding apparatus, and the remaining parts of the counting mechanism are assembled on the frame after the bobbin is wound.

3,580,499

FLUIDIC SLIP-RESOLVER SYSTEM

Peter Bauer, Germantown, and William R. Mentzer, Jr., Silver Spring, both of, Md., assignors to Bowles Fluidics Corporation, Silver Spring, Md.

Filed Oct. 30, 1968, Ser. No. 771,758
Int. Cl. G06d *5/00*
U.S. Cl. 235—201 **19 Claims**



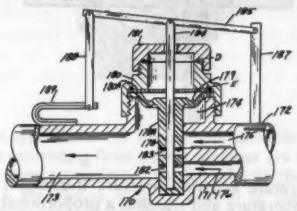
A fluidic system for monitoring relative frequency variations between two fluid pulse trains includes a fluidic clock pulse generator, a fluidic time synchronization circuit, a fluidic slip-resolver circuit and a fluidic up-down binary counter. The two fluid pulse trains are time synchronized and fed to a slip-resolver circuit, the output stage thereof providing output pulses when two or more successive pulses occur in one input pulse train between successive input pulses in the other train. Output pulses from the slip-resolver are counted by an up-down counter. Logic circuitry is provided to determine up or down counting modes in accordance with which input pulse train is increasing in frequency. In addition, fluidic switching circuits in the system receive sharply defined switching pulses by utilizing a shaper.

3,580,500

MODULATING VALVE CONSTRUCTION

Frederic R. Quinn, Red Hook, N.Y., assignor to Zyrotron Industries, Inc., South Hackensack, N.J.

Division of Ser. No. 707,014, Feb. 12, 1968. This application Apr. 3, 1969, Ser. No. 813,226
Int. Cl. G05d *11/16;* **F16k** *19/00*
U.S. Cl. 236—12 **2 Claims**



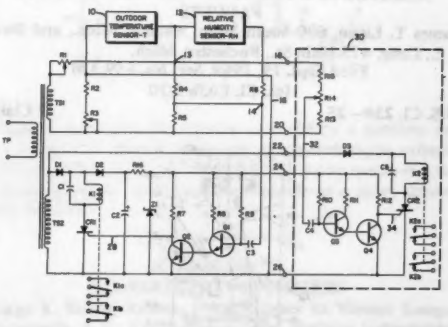
This disclosure is directed to a fluid mixing system utilizing modulating valves responsible to the pressure of an independent actuating fluid operating on a diaphragm operatively connected to the valving member for controlling the fluid flow therethrough. The disclosure further contemplates controlling the pressure of the valve actuating fluid in response to temperature. The disclosure also contemplates a diaphragmed mixing valve for controlling the mixing of at least two fluids in response to the temperature of the resulting mixed fluids.

3,580,501

HUMIDITY AND TEMPERATURE SENSING AND CONTROL CIRCUIT

Donovan P. Streed, Rte. 2, Shakopee, Minn.

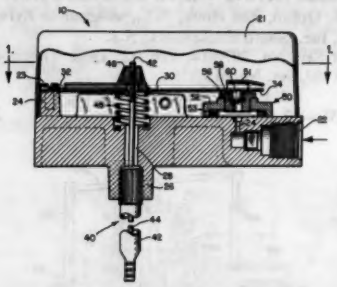
Filed Mar. 25, 1969, Ser. No. 810,309
Int. Cl. G05d *22/02*
U.S. Cl. 236—44 **6 Claims**



An electronic relative humidity sensing and control circuit having outdoor temperature reset is described. A circuit having temperature and humidity sensors arranged in a bridge circuit for providing control signals to a transistor amplifier is shown for controlling humidity-determining equipment. Ad-

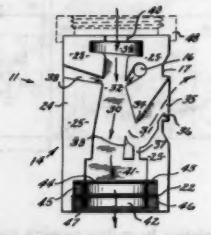
ditional bridge circuitry is also shown for automatically sensing an controlling heating and air conditioning equipment in response to sensed changes in outdoor temperature.

3,580,502
THERMOSTATIC PRESSURE TRANSMITTER
Ernest J. Duchek, Prospect Heights, Ill., assignor to Powers Regulator Company, Skokie, Ill.
Filed Mar. 28, 1969, Ser. No. 811,526
Int. Cl. G05d *23/275*
U.S. Cl. 236—102 **7 Claims**



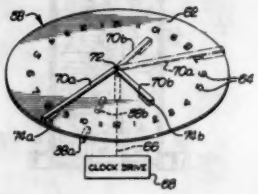
A temperature actuated pressure transmitter adapted to sense a temperature and transmit a proportional fluid signal. The transmitter includes a fluid pressure chamber, a cantilevered blade having a free end extended longitudinally adjacent said pressure chamber, a temperature sensing element adapted to transmit a force to said blade in response to a sensed temperature, and an exhaust nozzle assembly positioned in fluid communication with said chamber through which the fluid in said chamber can be exhausted. A valve member provided in an exhaust port of said nozzle assembly is engaged with the free end of said blade and is adapted to vary the rate of exhaust through said port and thereby vary the pressure in said chamber in accordance with the force transmitted to the valve member through the lever arm of said blade. The pressure in said chamber is thereby changed in proportion to the temperature sensed by said sensing means. In accordance with this invention, the nozzle assembly can be translated longitudinally with respect to the blade to adjust the span of the transmitter by adjusting the effective lever arm through which said blade operates against the valve member.

3,580,503
AERATOR AND FOUNTAIN ATTACHMENTS FOR FAUCETS
James T. Ligon, 800 South Main, Almont, Mich., and David L. Lang, 475 Main St., Rochester, Mich.
Filed Sept. 19, 1969, Ser. No. 859,330
Int. Cl. E03b *9/20*
U.S. Cl. 239—25 **7 Claims**



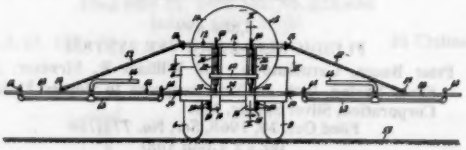
An aerator and fountain attachment which converts selectively an ordinary faucet into a drinking fountain and/or an aerating tap and with no moving parts. Flow directing channels are provided in a base element and the flow directing channels are aspirated through the base element. When specific aspiration is prevented the flow is shifted so that a portion of the flow is diverted from passing axially through the base element and is moved in a radial and upward disposition until aspiration is again permitted and then the flow is redirected in a normal aerating flow path through the attachment.

3,580,504
IRRIGATION CONTROL APPARATUS
Ralph E. Benham, Arcadia, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.
Filed Jan. 24, 1969, Ser. No. 793,669
Int. Cl. A01g *27/00*
U.S. Cl. 239—70 **9 Claims**



Automatic, remote operation of irrigation systems is provided without the use of central power facilities by controlling periodic water delivery to the irrigating heads through the use of battery charged capacitors to sequentially operate an electrically responsive valve actuator to open and close a valve in a predetermined time relation.

3,580,505
SPRAYER BOOM ASSEMBLY
Herbert V. Loeffler, Rte #2 & 71 By-Pass, Lee's Summit, Mo.
Filed Apr. 18, 1969, Ser. No. 817,437
Int. Cl. B05b *1/20*
U.S. Cl. 239—168 **8 Claims**



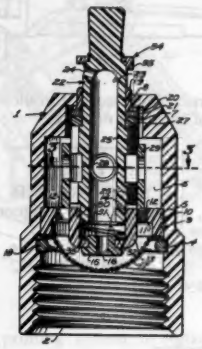
A sprayer boom assembly adapted to be mounted on a truck or other vehicle and including an elongated boom having a spray nozzles spaced therealong, said boom being disposed horizontally and transversely of the vehicle, extending outwardly at both sides of the vehicle, and including a central boom section suspended from the vehicle on a fore-and-aft axis by resiliently yieldable means whereby to remain generally horizontal when the vehicle tilts laterally, a pair of outer boom sections each pivoted for vertical movement to the contiguous end of said central section, and flexible strand supporting each of said outer boom sections in a normally horizontal position, and said strands being connected to said vehicle at points above the pivots of said outer boom sections.

3,580,506

BEARING FOR IMPACT MOTOR DRIVEN SPRINKLER

Robert B. Costa, Covina, Calif., assignor to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.

Filed Mar. 21, 1969, Ser. No. 809,190
Int. Cl. B05b 3/02
U.S. Cl. 239—230 4 Claims



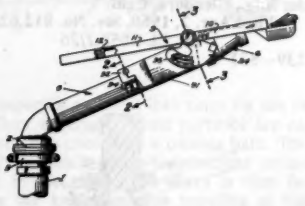
A bearing at the water entrance end of an impact motor for rotating sprinkler formed by the lower end of a tubular rotor and the walls of a surrounding socket, the bottom end of the socket having an inlet port of smaller diameter than the bore through the rotor so that incoming water and particles therein are jetted into the bore in such a manner that water flow between the confronting surfaces of the bearing is minimized.

3,580,507

DRIVE MECHANISM FOR LARGE VOLUME ROTARY SPRINKLERS

John D. Beamer, West Covina, Calif., assignor to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.

Filed June 9, 1969, Ser. No. 831,362
Int. Cl. B05b 3/08
U.S. Cl. 239—233 6 Claims



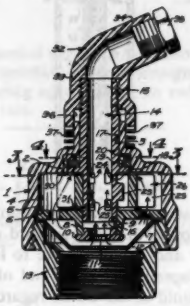
A drive mechanism for large volume rotary sprinklers having an upwardly sloping barrel rotatable about a vertical axis and terminating in a nozzle. An arm is supported intermediate its ends from the barrel for oscillation about a horizontal axis alongside the barrel. One end of the arm extends beyond the nozzle and is provided with a vane and a deflector spoon which move periodically into the water stream issuing from the nozzle to disrupt the stream and produce reaction forces which cause oscillation of the arm as well as rotation of the barrel, and the remaining end of the arm carries a counterbalance. A snubbing structure is journaled about the same axis as the arm and includes an adjustably connected snubber lever and counterbalance weight, the snubber lever being engaged after a preselected free travel of the arm, to lift the counterbalance weight.

3,580,508

MOTOR FOR ROTATING JET SPRINKLER

Ali Marandi, Azusa, and Kenneth H. Solomon, Claremont, both of, Calif., assignors to Rain B ird Sprinkler Mfg. Corp., Glendora, Calif.

Filed Mar. 25, 1969, Ser. No. 810,132
Int. Cl. B05b 3/04
U.S. Cl. 239—241 2 Claims



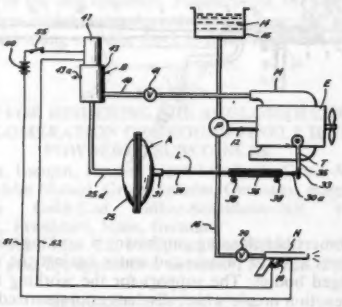
An impact type motor for rotating jet sprinklers in which impact lobes protruding from a rotor member are engaged by a polygonal impact ring; more particularly, to the construction in which the motive water is caused to flow over the axial ends of the impact ring thereby suspending the impact ring essentially friction free in the motor chamber.

3,580,509

CONTROL APPARATUS FOR HIGH-PRESSURE WATER SYSTEM

John B. Goss, 10950 Old Katy Road, Houston, Tex.

Filed Jan. 6, 1969, Ser. No. 789,238
Int. Cl. F02d 11/08
U.S. Cl. 239—302 9 Claims



Control apparatus for a pump powered by a gasoline engine or the like wherein means are connected to the exhaust manifold of the engine for increasing the pump speed and the fluid delivered by such pump to a nozzle at a point remote from the pump.

3,580,510

ALL-DIRECTION ATOMIZERS

George X. Batlas, Astoria, N.Y., assignor to Vincent Longo, Oceanside, N.Y.; Curtis F. Pearl and Anthony Genantonio, Teaneck, N.J., part interest to each

Filed June 23, 1969, Ser. No. 835,504
Int. Cl. B65d 1/32
U.S. Cl. 239—327 10 Claims

A resilient squeeze bottle has an elongated stopper extending downwardly therein, which provides an air duct and a

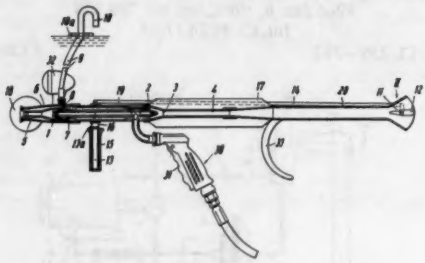
liquid duct extending therealong; said ducts being communicative with a slight mixing chamber at their upper ends, which chamber has an upward discharge orifice. The liquid duct has a branch extending upwardly where it is communicative with the bottle's interior at neck region, and said

liquid duct also has a downward extension to the bottom of the bottle. Said stopper has a downward openwork element. Both said stopper and element serve to limit the extent the bottle can be collapsed. The open end of the air duct is always above the liquid in the bottle regardless of the bottle's position when squeezed or not squeezed.

3,580,511
SUBMERSIBLE CLEANING GUN

Paul Hammelman, Zum Sundern 17, 474 Oelde Westphalia, and Heinz Lettmann, Im Schilffeld 19, 4832 Wiedenbruck, both of, Germany

Filed Dec. 27, 1968, Ser. No. 787,535
Claims priority, application Germany, Dec. 29, 1967, P 15 31 571.6
Int. Cl. B05b *7/02*
U.S. Cl. 239—419.5 **14 Claims**



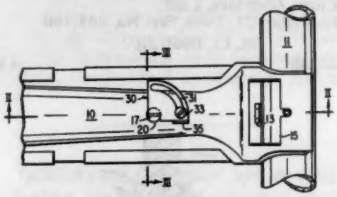
A submersible cleaning gun having a working nozzle which discharges a jet of pressurized water against the surfaces of submerged bodies. The support for the working nozzle carries a reaction nozzle which discharges pressurized water in a direction counter to the direction of discharge from the working nozzle to thus facilitate underwater manipulation of the gun. The support for the nozzles carries one or more inflatable and deflatable floats which determine the buoyancy of the gun. A handle is used to adjust the floats as well as to adjust a steering flap at the rear end of the gun.

3,580,512
GAS BURNER

Donald R. Smith, Diamond Bar, and Adrian V. Cavestany, Pasadena, Calif., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 15, 1969, Ser. No. 857,973
Int. Cl. B05b *7/06*
U.S. Cl. 239—432 **6 Claims**

A thin flat vane is disposed diametrically across the throat or air-gas passageway of the burner. The vane is mounted for rotation about its axis for movement of the flat side surfaces of the vane from a position parallel to the air-gas flow, in which it creates substantially no turbulence in the flow, to a position transversely of the flow in which it creates maximum

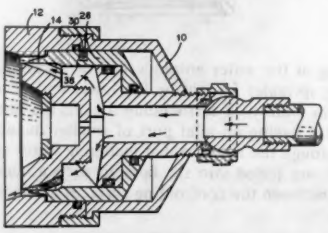


turbulence therein. Increase in turbulence effects reduction of the volume of air in the mixture.

3,580,513
SHOWER HEAD

George Martin, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.

Filed Jan. 31, 1969, Ser. No. 795,644
Int. Cl. B05b *1/32*
U.S. Cl. 239—460 **14 Claims**

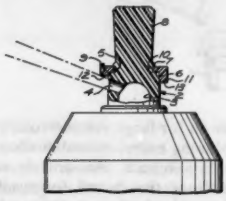


An adjustable shower head for the distribution of liquids having a control for regulating the flow of the spray. The shower head is constructed so that the forward pressure of the liquid on the shower head nozzle does not cause relative movement of the shower head parts. A piston-type of arrangement is employed wherein no fluid pressure is developed which acts on the adjusting mechanism.

3,580,514
DISTANCE SELECTOR FOR SPRINKLERS

Tony Radecki, West Covina, Calif., assignor to Rain Bird Sprinkler Mfg., Glendora, Calif.

Filed Apr. 2, 1969, Ser. No. 812,625
Int. Cl. B05b *1/26*
U.S. Cl. 239—521 **2 Claims**



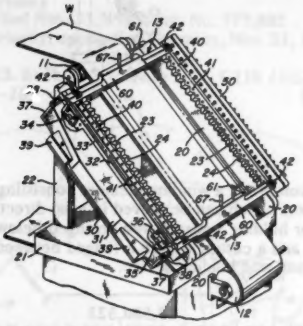
A distance selector for a sprinkler having an upwardly projecting stem in which is formed an upwardly and outwardly directed orifice, the selector being in the form of a ring rotatably mounted on the stem above the orifice and having a depending rim of varying depth which on rotary adjustment of the ring intercepts the water stream varying amounts; the stem having a handle projection so that the stem may be restrained to permit adjustment of the ring.

3,580,515

ALIGNMENT SYSTEM FOR ARRAYS OF A NONCONTACTING PRINTER

William Guy Cassill, McArthur, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Oct. 1, 1969, Ser. No. 862,718
Int. Cl. B05b 1/14
U.S. Cl. 239—536 12 Claims



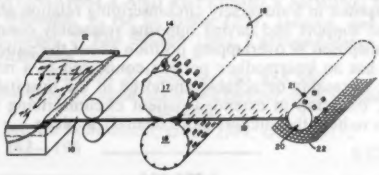
A noncontacting printing system in which images are formed on a moving web by projecting drops of ink or the like onto the web. The drops are projected from a series of coating heads, each of which has a series of passages for projecting the drops, and structure is provided for supporting and positioning the coating heads with their passages offset with respect to each other to the extent that the drops may be projected onto the web in close enough relationship to each other to give a continuous coating, if desired.

3,580,516

METHOD OF SEPARATING A SHEET INTO CHIPS

Virgil Spencer, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Division of Ser. No. 658,675, Aug. 7, 1967, Pat. No. 3,527,418, Sept. 8, 1970. This application Nov. 13, 1969, Ser. No. 871,284
Int. Cl. B02c 18/06, 18/44
U.S. Cl. 241—25 1 Claim



Method of separating a sheet into chips for use in the formation of a floor covering. Plastic particles are calendered into a sheet which is cooled by a cooling bath. The sheet is fed into a slitter which places intermittent cross-machine direction slits in the sheet. The sheet is then fed into a grinder where the knife-hammers traveling at high speed fracture the sheet into irregularly shaped chips.

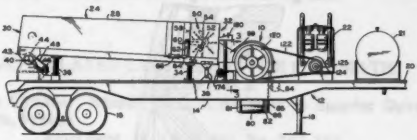
3,580,517

APPARATUS FOR CHIPPING SCRAP MATERIALS

Stanley V. Ehrlich, Portland, Oreg., assignor to Western Manufacturing, Inc., Portland, Oreg.

Filed Mar. 8, 1968, Ser. No. 711,658
Int. Cl. B02c 13/04, 18/06, 13/286
U.S. Cl. 241—186 29 Claims

An apparatus for reducing bulk materials such as scrap lumber, metal and masonry to fist-sized chunks to facilitate disposal of the same. Sharp-pointed, hammerlike knives pivoted between pairs of spaced plates on a common horizontal driven shaft pass downwardly in sequence past an anvil to shear off pieces of scrap fed across the anvil. Materials too bulky or hard to be sheared by the knives pivot the knives rearwardly to increase the clearance between knives and anvil and thus permit such materials to pass through the apparatus without damaging the mechanism. The apparatus



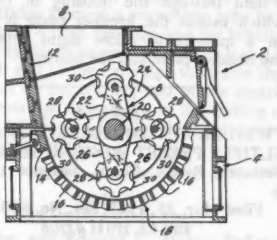
is mounted on a wheeled vehicle which also carries a vibratory conveyor and comblike material straightener for feeding scrap into the chipping apparatus in an orderly manner and at a predetermined rate.

3,580,518

RING HAMMERS

Sven B. Strom, St. Louis, Mo., assignor to American Pulverizer Company, St. Louis, Mo.

Filed Nov. 1, 1968, Ser. No. 772,505
Int. Cl. B02c 13/28, 13/04
U.S. Cl. 241—193 15 Claims



A ring hammer for use on the rotor of a material reducing machine and having a plurality of generally radial teeth which are interconnected by integrally formed fillets. The fillets, axially narrower than the teeth, act to prevent scrap material from lodging between the teeth to thus avoid any distending of the ring hammers. Furthermore, the fillets have cutting edges which extend continuously between adjacent teeth and act along with the teeth to shred material.

3,580,519

PROCESS FOR HINDERING THE AGGLOMERATION OR REAGGLOMERATION OF GROUND FINELY DIVIDED POWDERED SUBSTANCES

Kurt Klein, Langen, Hessen; Gerd Lumbeck, Gross-Auheim, and Joachim Maluzi, Gross-Auheim, Germany, assignors to Deutsche Gold-Und Silber-Scheidean-stalt vormals Roessler,, Frankfurt, Main, Germany

Filed Mar. 25, 1968, Ser. No. 715,581
Claims priority, application Germany, Mar. 23, 1967, D52612
Int. Cl. B02c 19/00, 23/06
U.S. Cl. 241—22 3 Claims

Process for protecting ground finely divided powdered substances against agglomeration or reagglomeration wherein the substance to be protected is finely ground together with a finely divided hydrophobic silica or wherein a mixture of finely divided hydrophobic silica and finely divided hydrophilic silica is added to the substance to be protected already in finely ground state and intensively mixed therewith in a mill having a grinding action.

3,580,520

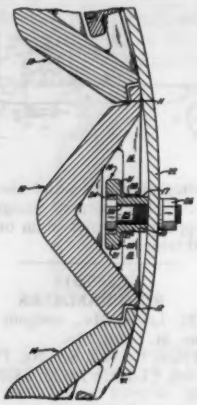
BREAKER PLATE ASSEMBLY FOR A DISINTEGRATOR

Thomas Leroy Myers, Lawrenceburg, Ind., assignor to Stedman Foundry and Machine Company, Incorporated, Aurora, Ind.

Filed Oct. 29, 1968, Ser. No. 771,524
Int. Cl. B02c 17/22
U.S. Cl. 241—299 4 Claims

A disintegrator of the type used in the sand and gravel in-

dustry. The breaker plate assembly of such a disintegrator is formed with two opposed projecting ribs, the ends of which form an opening for receiving a T-bar. A bolt passes through



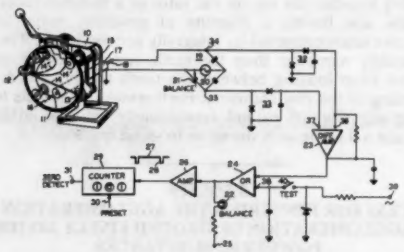
the T-bar and through the housing of the disintegrator through which means the breaker plate is secured to the housing in a manner to allow slight relative movement between the breaker plate and the housing.

3,580,521

COIL WINDER AUTOMATICALLY SEQUENCING MULTIPLE PRESET WINDING SELECTIONS

Richard Settanni, Bethel, Conn., assignor to Leesona Corporation

Filed Mar. 25, 1969, Ser. No. 810,215
Int. Cl. H01f *41/08*
U.S. Cl. 242—4 **10 Claims**



A toroidal coil winder is disclosed with electronic turn counter equipment and preset turn count registers, including program control circuits for automatically stepping through an ordered array of turn count registers for successive windings on a single core.

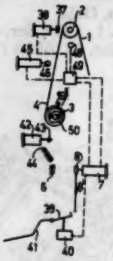
3,580,522

METHOD AND ARRANGEMENT FOR WINDING UP A CONTINUOUS WEB

Viggo Rasmus Hansen, Naestved, and Per Juel Hagemeister, Glostrup, Denmark, assignors to C. A. Harnden Limited, Hyde/Chesire, England

Filed Nov. 4, 1968, Ser. No. 773,080
Claims priority, application Denmark, Nov. 9, 1967, 5582/67
Int. Cl. B65h *19/20*
U.S. Cl. 242—56 **9 Claims**

A method of winding a continuous web to form wound packages comprises the following steps: Winding on a run of the web to a winding element thus forming a wound package; removing said winding element from said wound package; moving away said wound package; holding fast said web at a holding point between said winding element and said wound package; bringing said winding element again into engagement with said web and beginning a new winding operation for only a few revolutions; cutting through said web between said winding element and said holding point; finishing said new winding operation. An apparatus for carrying out said



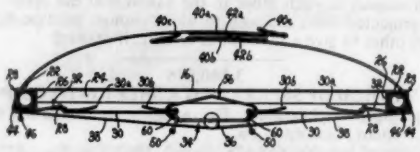
method comprises a winding element consisting of two rotating grippers which can be moved in axial direction, a holding device for holding fast said web arranged below said winding element, and a cutting device arranged between said winding element and said holding device.

3,580,523

RETRACTABLE SAFETY BELT FOR HOSPITAL GURNEYS AND THE LIKE

Walter George Preston, Tulare, Calif., assignor to John T. Posey

Filed Nov. 14, 1968, Ser. No. 775,793
Int. Cl. B65h *75/48*
U.S. Cl. 242—107.1 **11 Claims**



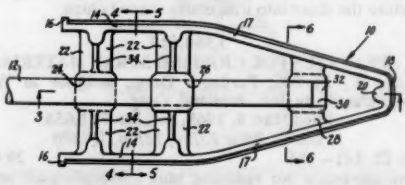
A safety belt for use on patient supporting hospital equipment such as operating tables, gurneys, wheelchairs and the like which includes an elongated restraining strap adapted to be disposed in transversely circumscribing relation about the patient support and having opposite releasably connectable ends disposed in overlapping position about the patient. The strap has an intermediate portion connected to a retracting roller releasably detachable anchored to the hospital equipment, the strap in extended patient circumscribing relation serves to hold the anchors more securely in place.

3,580,524

UNIVERSAL YARN SPOOL HOLDER

Eugene E. Weaver, 1334 Stuart St., Chattanooga, Tenn.

Filed Dec. 1, 1969, Ser. No. 881,140
Int. Cl. B65h *49/00*
U.S. Cl. 242—129.7 **7 Claims**



A yarn spool holder of unitary construction having a tapered U-shaped configuration with crossmembers secured to the rod on the creel by a wedging action thereby eliminating the use of setscrews, wrenches and the like for securing the holder on the rod and enabling the spool to be placed on

the holder by employing only one hand.

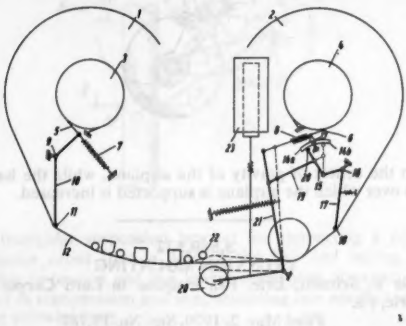
The present invention generally relates to a yarn spool holder for use in tufting machines.

3,580,525

ARRANGEMENT MAINTAINING CONSTANT TAPE TENSION IN MAGNETIC TAPE RECORDERS

Horst Dopner, Bensberg-Frankenforst, Germany, assignor to Telefunken, Patenverwertungsgesellschaft m.b.H., Ulm Donau, Germany

Filed Nov. 21, 1968, Ser. No. 777,803
Claims priority, application Germany, Nov. 21, 1967, P 15 49 107.3
Int. Cl. B65h *59/38*; G03b *1/04*; G11b *15/32*
U.S. Cl. 242—189 **10 Claims**



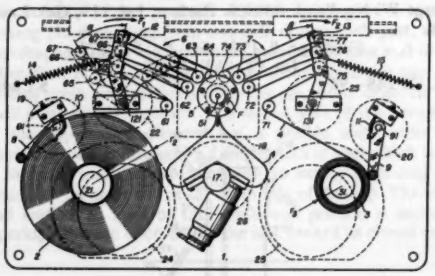
Arrangement for maintaining constant the tension of the tape on the reels of a magnetic tape recorder during its normal forward and rewind operations. Feeler means is disposed in the path of the tape near the takeup reel. Such feeler means is arranged to respond to the tension in the tape to control the brake associated with the takeup spindle. Means are provided for automatically reversing, during rewind operation, the effect which the feeler means has on such brake during normal forward operation and thereby providing a control of the tension in the tape for both normal forward and rewind operations.

3,580,526

APPARATUS FOR STORING AND WINDING DISCONTINUOUSLY AND REVERSIBLY MOVING TAPE

Michel Wichoud, 1, rte de Drize 1227, Geneva, and Jean Pierre Engel, 3, Rue Schaub 1202, Carouge-Geneva, both of, Switzerland

Filed Sept. 5, 1969, Ser. No. 855,550
Claims priority, application Switzerland, Sept. 6, 1968, 13432/68
Int. Cl. B65h *59/38*; G03b *1/04*; G11b *15/32*
U.S. Cl. 242—190 **6 Claims**



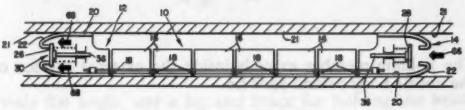
In apparatus for storing and winding tape travelling discontinuously and reversibly through a reading unit and comprising drive means for reversibly driving the tape through the reading unit and a pair of reversibly driven spools off which and on to which the tape is wound, the provision of a takeup system, including a pair of pulley arrangements on opposite sides of the drive means, responsive to variations in the length of the tape paths between the spools and the drive means, and electrical means controlled by the takeup system to restore the proper driving relationships between the spools and the tape as it passes through the reading unit.

3,580,527

ARTICULATED CARTRIDGES FOR PNEUMATIC CONVEYANCE

Simon Cynober, Bezons, France, assignor to Saunier Duval, Paris, France

Filed Sept. 16, 1968, Ser. No. 762,253
Int. Cl. B65g *51/04*
U.S. Cl. 243—38 **9 Claims**



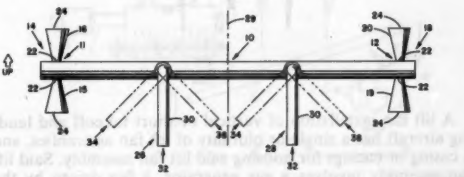
This disclosure includes a method and apparatus for propelling a cartridge through a pneumatic tube by creating a pressure differential within the tube and for braking the cartridge by reversing the pressure differential. Valve means are provided in each end of the cartridge to enable the pressure differential to act on the leading end of the cartridge when propelling the cartridge and to act on the trailing end of the cartridge during braking so that longitudinal compression of the cartridge is precluded.

3,580,528

MANEUVERING UNIT

William C. Boyce, and Edward C. Matza, Dallas, Tex., assignors to LTV Aerospace Corporation, Dallas, Tex.

Filed Feb. 3, 1969, Ser. No. 795,794
Int. Cl. B64g *1/20*
U.S. Cl. 244—1 **10 Claims**



A hand-held device for propelling an individual through space wherein pressurized fluid is selectively and individually discharged from oppositely directed coplanar nozzles in response to movement of a pair of control handles relative to a supporting member.

3,580,529

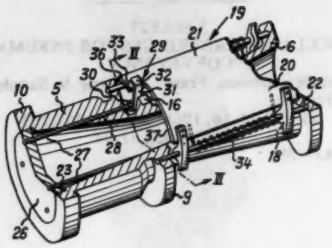
ROCKET WITH SPREADABLE EMPENNAGE

Xaver Suter, Ruschlikon, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle A.G., Zurich, Switzerland

Filed Sept. 12, 1968, Ser. No. 759,364
Claims priority, application Switzerland, Sept. 21, 1967, 13225/67
Int. Cl. F42b *13/32*
U.S. Cl. 244—3.29 **5 Claims**

Rocket with spreadable empennage comprising a nozzle body with pivotally mounted individual fins located around said body. Holding means releasable by gas pressure holding the fins in their folded-in position. The holding means for each fin comprising a holding member removable from said nozzle body supported in said nozzle body. A locking

member cooperating with the holding member locks the fin and when the holding member is removed, releases the fin.



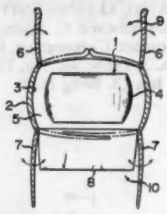
The holding member extends inside the external surface of the nozzle body behind each fin.

3,580,530

LIFT FAN INSTALLATION OF VERTICAL OR SHORT TAKE-OFF AND LANDING AIRCRAFT

Misao Wada, Fujisawa-shi, and Kiyoshi Soda, Yokohama-shi, Japan, assignors to Japan Aircraft Manufacturing Co., Ltd., Yokohama-shi, Japan

Filed Feb. 25, 1969, Ser. No. 802,192
Claims priority, application Japan, Nov. 9, 1968, 43/81622
Int. Cl. B64c *29/04;* **F02k** *3/04*
U.S. Cl. 244—54 **3 Claims**



A lift fan installation of vertical or short takeoff and landing aircraft has a single or plurality of lift fan assemblies, and a casing or casings for housing said lift fan assembly. Said lift fan assembly involves a gas generator, a fan driven by the fluid derived from said generator, and an engine body in which said generator and fan are disposed. Between the inner wall of the casing and the outer wall of the engine body is defined an air passage, the effective cross-sectional area of which is less than one and a half times that of the exhaust duct of said lift fan assembly.

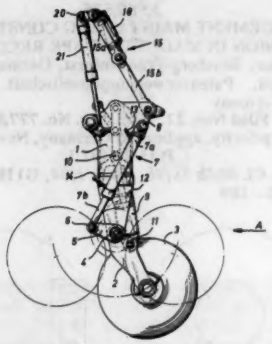
3,580,531

RETRACTABLE MAIN CARRIAGE FOR VERTICALLY STARTING AIRPLANES AND AIRPLANES STARTING ON A SHORT RUNWAY

Gerhard Bock, Bremen; Rolf Riccius, Worpswede; Gunter Weitkamp, and Bernhard Wolf, Bremen, Germany, assignors to Vereinigte Flugtechnische Werke Gesellschaft mit beschrankter Haftung fruher "Wesert" Flugze ugbau/Fock-Wulf/Heinkel-Flugzeugbau, Hunefeldstrasse, Bremen, Germany

Filed July 19, 1968, Ser. No. 746,015
Int. Cl. B64c *25/10*
U.S. Cl. 244—102 **2 Claims**

A retractable main landing gear located behind the center of gravity of the airplane and comprising an adjusting mechanism operable selectively to adjust the landing wheel from a front supporting position, in which the landing wheel is closer to the center of gravity of the airplane, to a rear supporting position, in which the landing wheel is farther away from the center of gravity of the airplane, while the base or area over which the airplane is supported is increased.

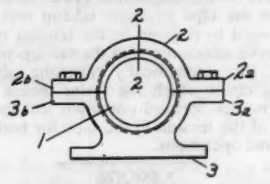


3,580,532

TRUNNION MOUNTING

Regis V. Schmitt, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Mar. 2, 1970, Ser. No. 15,787
Int. Cl. B60k *1/00*
U.S. Cl. 248—9 **4 Claims**



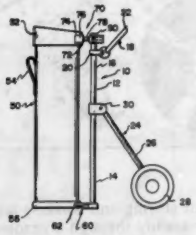
The service life of bonded elastomer trunnion mountings is improved by tapered annular grooves in the outer surfaces of the elastomer adjacent the split metal ring by which the mounting is seated in the trunnion support.

3,580,533

GOLF CART BAG SECUREMENT APPARATUS

George W. Nordland, 8800 S. Harlam, Lot 119, Oak Lawn, Ill.

Filed Apr. 8, 1969, Ser. No. 814,273
Int. Cl. A63b *55/08*
U.S. Cl. 248—96 **5 Claims**



An apparatus for removably connecting a golf bag to a golf cart. The apparatus includes a bag supporting base portion

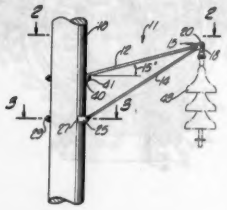
on the frame of the cart which serves to removably retain a loop member connected near the bottom of a golf bag in a recess formed in the base portion and a locking device having an element connected near the upper end of the golf bag which is cooperable with an element on the cart frame to permit the ready removal of the bag from the cart.

3,580,534

SUSPENSION BRACKET FOR CONDUCTOR INSULATOR

L. E. Lindsey, 222 Vista Ave., Pasadena, Calif.

Filed June 16, 1969, Ser. No. 833,360
Int. Cl. H02g 7/20
U.S. Cl. 248—221 **5 Claims**



A triangular suspension bracket for supporting a power conductor offset from a pole or the like and having one member in tension and two longer underlying diverging legs loaded in compression and supplementing one another in resisting sidewise sway.

3,580,535

CONNECTING FIXTURE

Christoph Naske, Froschhausen, Germany, assignor to WHB-Anbaumobel von Poschinger K.G., Murnau, Germany

Filed Apr. 24, 1970, Ser. No. 31,583
Claims priority, application Germany, Apr. 24, 1969, G6916620.7
Int. Cl. A47g 29/02
U.S. Cl. 248—239 **4 Claims**

A two-piece fixture for connecting two shelf parts or the like at right angles to each other consisting of a headed locking pin projecting from one side of one shelf part, and a cup-shaped slotted element to be mounted in one end of the other shelf part and adapted to be hooked laterally over the headed projecting part of the locking pin and to draw the two shelf parts tightly together. The largest part of the periphery of the cup-shaped element has a double wall, while the remaining part is formed by a single thicker wall which is flat at its outer side and provided with an axially extending slot which has an open end at the open side of the cup. The inner wall surface at least of this single-wall portion is inclined, tapering from the open end of the slot toward its closed end.

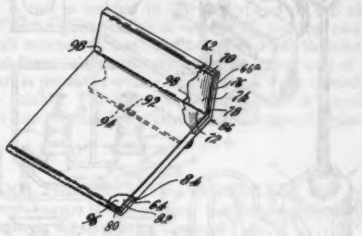
3,580,536

SLANT FRONT EASEL

Gordon E. Nichols, Middleboro, Mass., assignor to Winthrop-Atkins Co., Inc., Middleboro, Mass.

Filed Aug. 7, 1968, Ser. No. 750,985
Int. Cl. A47b 97/08
U.S. Cl. 248—459 **3 Claims**

An easel-type mount having a headboard and baseboard disposed at an angle to each other such that the headboard rises at a relatively steep angle to the baseboard and the baseboard slopes downwardly from the headboard at a relatively flat angle, and a leg and brace for holding the headboard and baseboard at said angle.

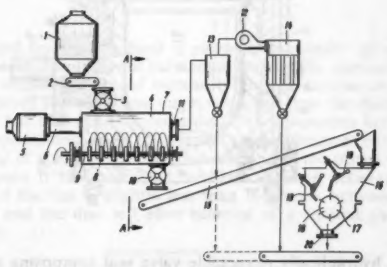


3,580,537

PROCESS FOR DRESSING ASBESTOS ORE WASTE

Ehrhardt Andreas, Munster in Westfalen, Germany, assignor to Hazemag Hartzerkleinerungs-Und Zementmaschinenbau-Gesellschaft, m.b.h., Munster, Westphalia, Germany

Filed June 19, 1969, Ser. No. 834,694
Claims priority, application Germany, June 20, 1968, P 17 60 686.9
Int. Cl. B27k 7/00; B27i 9/00; B27l 11/00
U.S. Cl. 241—4 **10 Claims**



A process for dressing asbestos ore waste in which the waste material is dried by whirling it through a stream of hot gas to prevent encrustation of the material during the drying process and to separate at least some of the asbestos fibers from the ore waste and by subsequently comminuting the material in an impact breaker to separate substantially all remaining fibers from the ore and the fibers from each other.

3,580,538

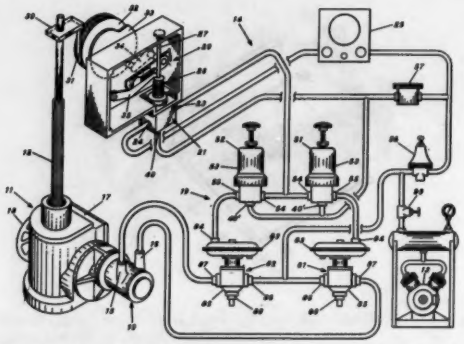
PNEUMATIC SYSTEM FOR AIR MOTOR CONTROL

Leon M. Wyrick, Pleasant Hill, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of application Ser. No. 492,191, Oct. 1, 1965, now abandoned. This application Nov. 20, 1968, Ser. No. 786,527
Int. Cl. F15b 13/16; F16k 13/12
U.S. Cl. 251—29 **7 Claims**

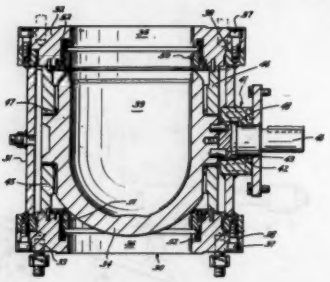
In a pneumatic amplifying and actuating circuit for a control system useful in controllably varying a stem of a valve within a process line, complementary output stages of the

amplifying and actuating circuit are separately utilized (depending on the direction of deviation of a control signal with



respect to a setpoint pressure level) to automatically control the repositioning of the valve stem.

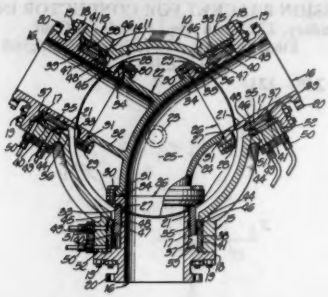
3,580,539
VALVE SEAL AND SYSTEM
Davis A. Van Scoy, Houston, Tex., assignor to Helmerich & Payne, Inc., Houston, Tex.
Filed Jan. 15, 1968, Ser. No. 697,979
Int. Cl. F16k *25/00*
U.S. Cl. 251—159 **14 Claims**



A hydraulically retractable valve seal comprising a sleeve seat member mounted for limited sliding movement in a counterbored flow passage of a valve. The seat member is biased toward the closure member of the valve by springs mounted between an outwardly flaring flange portion of the seat member and the valve body. A resilient sealing member is mounted on the inner face of the seat member for sealing contact with the valve closure member. An annular chamber is formed between the counterbore of the valve body and the cylindrical exterior of the seat member. This chamber is sealed at one end by a stationary ring seal connected to the valve body and at the other end by a ring seal connected to the seat member flange for sliding contact with the counterbore. The annular chamber is connected to a pressure source for selectively overcoming the spring bias to retract the seat member and consequently the sealing member from sealing contact with the valve closure member.

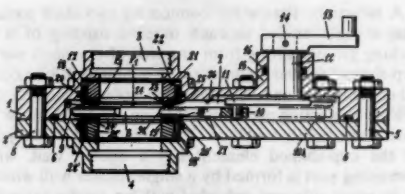
Also, a system employing a valve equipped with the seal described comprising an electrical power source for energizing relay and time delay devices to first activate a pump for retracting the seal then second activate an operator for rotating the valve closure member only after the seal is completely disengaged therefrom. A limit switch attached to the operator deenergizes the electrical circuits, after complete rotation of the closure member, to stop the pump and relieve pressure from the annular chamber of the valve seal. The seal once again engages the closure member under spring bias.

3,580,540
ROTATABLE MULTIPORT VALVE WITH FLUID PRESSURE CONTROLLED VALVE MEANS
Irving Joseph Heinen, 3758 Parkview Drive, Lakewood, Calif.
Filed Oct. 3, 1968, Ser. No. 764,743
Int. Cl. F16k *5/18*
U.S. Cl. 251—159 **1 Claim**



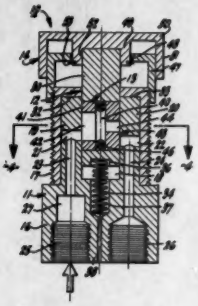
A rotatable multiport valve structure which is susceptible of use, for example, in two, three, or four-way, and the like flow control valves, and includes a hollow valve body within which there is rotatably mounted a normally freely rotatable flow control gate means containing flow passages or channels which are selectively positionable in registration with body ports communicating with flow passages having connector members for connection with conduits. Sealing of the registered flow channels or passages at each port is accomplished by means of a fluid pressure actuated ring piston reciprocally motivated to seated and nonseated positions at its inner end with respect to an annular seat carried by the rotatable gate means, and wherein the piston in seated position acts to lockingly retain the gate means against movement.

3,580,541
COCK
Marcel Bouhot, 35 Avenue du General Sarrail, Paris, France
Filed Jan. 22, 1970, Ser. No. 4,995
Claims priority, application France, Jan. 27, 1969, 6,901,529
Int. Cl. F16k *5/06*
U.S. Cl. 251—174 **6 Claims**



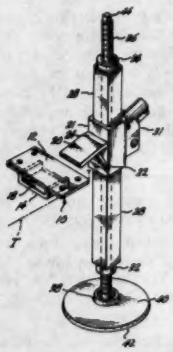
A cock comprising a body, a closure member displaceable within said body so as to establish or interrupt a communication between two orifices formed in opposite relation within said body and in the vicinity of each orifice a seal engaging said closure member. Each seal comprises a tubular ring of polytetrafluoroethylene which is engaged in a recess formed in the body and in fluidtight contact with a packing fitted in the wall of said recess; the tubular ring is provided with a deformable lip applied by a washer in fluidtight contact with the closure member. Owing to this arrangement, the polytetrafluoroethylene lip does not creep and the packing fitted in the wall of the recess is not caused to swell.

3,580,542
PUSHBUTTON VALVE
Allen C. Wright, Moraga, Calif., assignor to Haws Drinking Faucet Company, Berkeley, Calif.
Filed Sept. 5, 1969, Ser. No. 855,599
Int. Cl. F16k *1/10*
U.S. Cl. 251—282 10 Claims



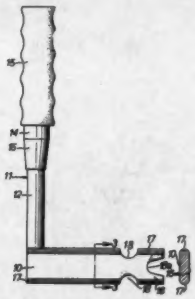
A pushbutton valve of the type used in drinking fountains to control the flow of water to the discharge nozzle thereof. The moveable control component of the valve assembly is isolated from unbalanced pressure forces and is therefore displaceable between the open and closed positions thereof with substantially the same manual force irrespective of the pressure of the water supply delivered to the fountain. The valve assembly includes a casing defining a cylinder having inlet and outlet passages and communicating therewith intermediate its ends and at laterally spaced locations. A control piston reciprocable within the cylinder is moveable between open and closed positions and is spring biased toward the closed position thereof. The piston has a valve chamber intermediate its ends within which is located a valve structure providing a pressurizable chamber and inlet and outlet ports opening thereinto and communicable with the inlet and outlet passages of the assembly when the control piston is in its open position. The valve structure is comprised of a plurality of individual components, and water pressure within the pressurizable chamber biases the valve components into slidably sealing engagement with the walls of the cylinder.

3,580,543
TRAILER JACK
Otto F. Hafeli, Rte. 4, Box 929, Port Angeles, Wash.
Filed Nov. 29, 1968, Ser. No. 782,509
Int. Cl. B66f *3/36*
U.S. Cl. 254—100 4 Claims



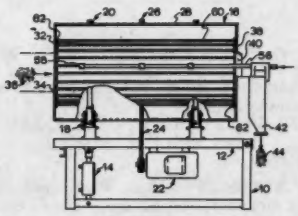
A generally rectangular bracket is secured to the underside of a trailer and provides a slot for receiving a tongue that is mounted on a slidable sleeve. The lower side of the bracket is shorter than the upper side to receive a brace that is welded between the sleeve and the brace so that the weight of the trailer is supported on the brace. The sleeve is adjustably mounted on an elongated frame and is locked in any desired position along the frame by a conventional pawl and detent mechanism. A nut is welded to the lower end of the elongated frame and a guide collar is welded to the top end. A threaded shaft extends through the collar and nut to position the elongated frame above the ground. The upper end of the threaded shaft is provided with a square head to be turned by a wrench or ratchet. The lower end of the shaft is rounded and rests in a cup formed integrally on a flat support plate.

3,580,544
TOOL FOR USE WITH DISC BRAKES
Arthur Albert Payne, Birmingham, England, assignor to Girling Limited,, Birmingham, England
Filed Nov. 7, 1968, Ser. No. 774,067
Claims priority, application Great Britain, Nov. 10, 1967, 51255/67
Int. Cl. B66f *3/00*
U.S. Cl. 254—131 5 Claims



A tool for pushing back a piston in a cylinder of a disc brake comprises a bar of substantial length. The opposed end edges of the bar are of outwardly convex section and the dimensions between these edges is greater than the thickness of the bar between opposed sides. The dimensions between the opposed end edges correspond to the distances between the disc of a disc brake and the inner end of the piston when the piston is fully retracted, and the distance between the sides of the bar is slightly less than the space between the piston and the disc left after removal of a friction pad assembly.

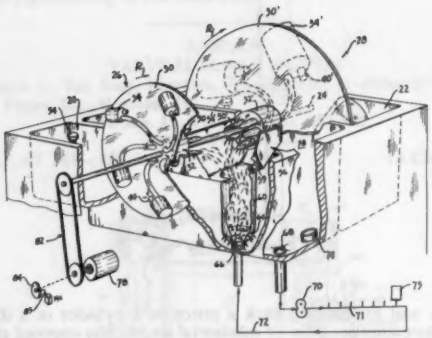
3,580,545
APPARATUS FOR AGGLOMERATING DUSTS AND THE LIKE
Edward D. O'Brien, Woodside, Calif., assignor to Stauffer Chemical Company, New York, N.Y.
Continuation-in-part of application Ser. No. 652,922, July 12, 1967, now abandoned. This application May 23, 1969, Ser. No. 858,213
Int. Cl. B01f *9/06*
U.S. Cl. 259—3 10 Claims



Apparatus for agglomerating fine particles including a rotatable mixer, generally resembling a rotary drum dryer,

having optionally a conveyor, such as a spiral vane, as an aid in moving particulate base material therethrough, an applicator, such as a manifold with spray nozzles for applying a liquid or another solid particulate material to the base material and thereby effecting coating and agglomeration of the base material, and lifter elements mounted within the mixer and rotatable therewith adapted to move through the normally relatively dormant central region of the mass of base material and thereby cause the base material in this region to become mixed with the base material in the normally actively moving inner and outer regions of said mass.

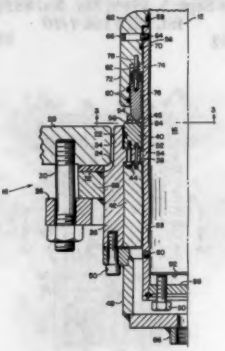
3,580,546
DEVICE FOR MIXING AND PROPORTIONING LIQUIDS
Colin Kenneth Glenn Fraser; Ernest Favreau, and Willis Paul March, Vancouver, British Columbia, Canada, assignors to Kaydon Technical Enterprises, Ltd., Vancouver, Canada
Filed Sept. 3, 1969, Ser. No. 854,888
Claims priority, application Canada, Sept. 5, 1968, 029,275
Int. Cl. B01f *15/04*; G05d *11/02*
U.S. Cl. 259—4 **23 Claims**



An apparatus for mixing and proportioning liquids includes a plurality of tanks for containing liquids to be mixed together. Each of the tanks has a bucket carrying assembly disposed therein, each such assembly being arranged for rotation to cause the buckets to successively enter into and emerge from the liquid contained in their respectively associated tank. The buckets are provided with means whereby each bucket is completely filled during each rotation cycle of each assembly. The buckets are also provided with means to effect discharge of the content of the buckets at a discharge region and a mixing device is provided to receive the discharged liquids and mix them together. The liquid capacities for buckets of each assembly are preselected to permit the several liquids to be mixed together in the desired proportions.

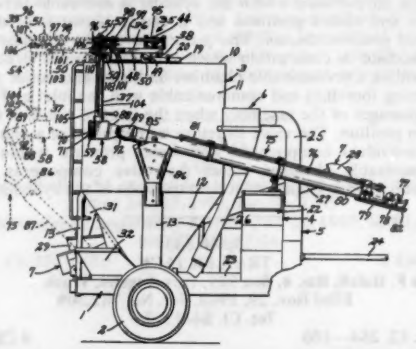
3,580,547
PACKAGE, LIQUID FLUSHED, STEADY BEARING ASSEMBLY
Franklyn J. Amorese, Hilton, N.Y., assignor to Sybron Corporation, Rochester, N.Y.
Filed June 13, 1969, Ser. No. 832,929
Int. Cl. B01f *7/20*; F16c *1/26*
U.S. Cl. 259—23 **10 Claims**

Disclosed is a liquid flushed, steady bearing assembly which can be mounted as a package to the exterior of a mixing vessel to support the free end of an agitator shaft protruding outwardly from the vessel so that the wear bearing of the assembly is serviceable from outside of the vessel. The flushing liquid is discharged radially from the assembly and into the vessel in a single stream from between a stationary member and a rotating member located within the vessel,



wherein the spacing between these members can be controlled in part from outside of the vessel.

3,580,548
CONVEYOR ATTACHMENT FOR PORTABLE FEED MILL
Carroll E. Moore, Minneapolis, Minn., assignor to Farmhand, Inc., Hopkins, Minn.
Filed May 16, 1969, Ser. No. 825,366
Int. Cl. B01f *5/12, 7/00*
U.S. Cl. 259—95 **7 Claims**

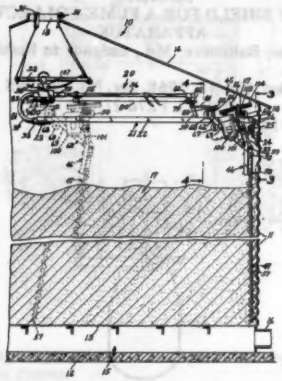


An attachment for mounting a feeding auger to the mixing tank of a portable feed mill for driving engagement with a rotary mixing device in the mixing tank, to convey material selectively to a plurality of inlets to the mixing tank, from various points of supply exterior of the tank. Supporting structure is rotatively mounted on the mixing tank and the feeding auger is operatively connected to the supporting structure for universal swinging movements relative to the supporting structure.

3,580,549
GRAIN STIRRING DEVICE
David M. Murphy, Mason City, Iowa, assignor to David Manufacturing Co., Mason City, Iowa
Filed July 31, 1969, Ser. No. 846,362
Int. Cl. B01f *7/00*
U.S. Cl. 259—102 **16 Claims**

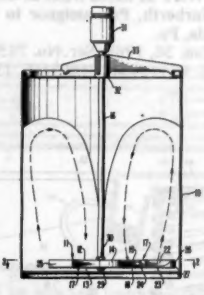
A device for stirring material in a cylindrical container and which includes a support means mounted within the container for orbital movements about the vertical axis thereof, a trolley means mounted on the support means for movements radially toward and away from the all of the container, and a stirring auger having the upper end thereof rotatably

mounted on an auger support means carried by the trolley means. The auger support means depends from the trolley means and extends laterally outwardly therefrom toward the wall of the container so as to position the auger in close proximity and substantially parallel to the wall of the container



when the trolley means is fully moved radially toward the wall of the container. Drive means is connected to move the support means in its orbital path of travel, to move the trolley means radially toward and away from the wall responsive to movement of the support means, and to rotate the stirring auger.

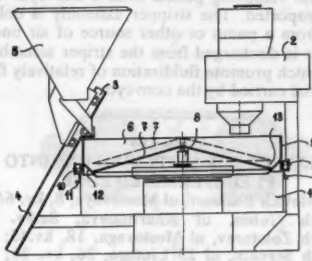
3,580,550
MIXING APPARATUS
Roy Hunnicutt, Box 9108, Amarillo, Tex.
Filed June 13, 1968, Ser. No. 736,729
Int. Cl. B01f *7/20*
U.S. Cl. 259—107 **3 Claims**



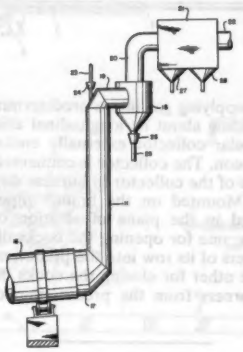
A bladed mixing rotor particularly for viscous liquids having plural radial blades projecting from a central hub. Each blade has a first recess in its lower surface adjacent the hub and a second recess in its top surface outwardly of the first recess. Two inclined pumping surfaces are thus formed on each blade, the pumping surfaces being reversely inclined.

3,580,551
CONCRETE AND THE LIKE MIXER
Heinz Hammann, Speyerdorf, and Werner Dick, Eisingen, Germany, assignors to Lico A G, Glarus, Switzerland
Filed Aug. 14, 1969, Ser. No. 850,112
Claims priority, application Germany, Aug. 21, 1968, Nov. 8, 1968, G6,752,714; G6,805,948
Int. Cl. B28c *7/16*
U.S. Cl. 259—152 **10 Claims**

A concrete or the like mixer comprises an open-topped main mixing container and a premixer disposed above the main mixing container and having a circular bottom wall rotated about a vertical axis and normally frictionally engaging the lower part of a cylindrical sidewall forming a premixing container together with said bottom wall. In order to discharge the contents of the premixer into the main mixing container, the bottom and sidewalls of the premixer are temporarily disengaged, to provide a peripheral annular discharge passage.

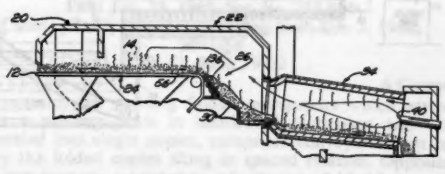


3,580,552
STACK PREHEATER
Dan Sigurd Hansen, Copenhagen-Valby, Denmark, assignor to F. L. Smidth & Co., New York, N.Y.
Filed Apr. 9, 1969, Ser. No. 814,774
Claims priority, application Great Britain, Apr. 24, 1968, 19,440/68
Int. Cl. F27b *7/02*; **F26b** *17/00*
U.S. Cl. 263—32 **4 Claims**



A heat exchanger for preheating granular or pulverulent material especially when such material is fed to a rotary kiln. The preheater is in the form of an upright stack or tubular conduit within which means is fixedly mounted extending from the bottom to the top of the stack and providing guiding surfaces for the heating gas which flows upwardly through the stack, and for the granular or pulverulent material as it flows downwardly countercurrent to the gas flow.

3,580,553
GRATE STRIPPER FOR PELLETIZING MACHINE
Daniel M. Urich, Hibbing, Minn., assignor to Eveleth Taconite Company, Forbes, Minn.
Filed May 14, 1969, Ser. No. 824,397
Int. Cl. F27b *7/02*
U.S. Cl. 263—32 **7 Claims**



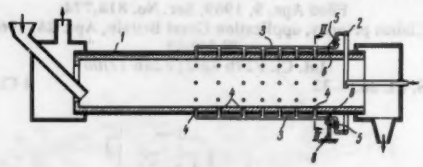
An improved pellet hardening machine or assembly includes a preheating section wherein pellets of iron ore are

preheated and an indurating section wherein the preheated pellets are heated to a desired hardness. A stripper assembly is provided for removing pellets from a conveyor on which they are transported. The stripper assembly is colled by a flow of air from a pump or other source of air under pressure. This air is discharged from the striper assembly in jets or streams which promote fluidization of relatively fine particles of material carried by the conveyor.

3,580,554
APPLIANCE FOR SUPPLYING GAS INTO A PREDETERMINED ZONE

Vladimir Pavlovich Bushuev, ul Mostovaya, 8, kv. 64; Georgy Viktorovich Gubin, ul Kharitonova, 8a,kv. 2; Petr Semenovich Zolotarev, ul Mostovaga, 18, kv.45; Vladimir Andreevich Sorokin, ul 23 Ljutogo, 26, kv. 26; Vladimir Ivanovich Palamarchuk, per Zhurnalistov, 8, kv. 21, and Viktor Makarovich Dmitrenko, ul Kropivnitskogo, 30, kv. 37, all of Krivoi Rog, U.S.S.R.

Filed Apr. 23, 1969, Ser. No. 818,611
Int. Cl. F27b *7/00*
U.S. Cl. 263—33 **3 Claims**

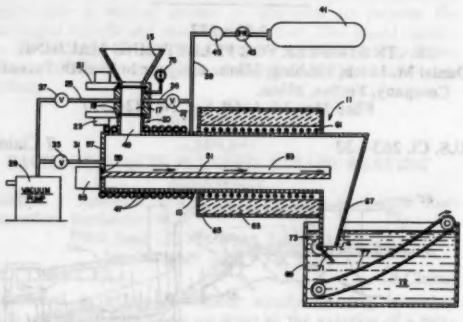


A device for supplying gas into a predetermined zone of a roasting kiln rotating about its longitudinal axis. The device includes an annular collector externally enclosing the kiln and secured thereon. The collector is connected to a gas line and branch pipes of the collector to burners disposed in rows along the kiln. Mounted on the branch pipes are shutoff devices. Provided in the plane of rotation of the shutoff devices are stops: one for opening the cocks disposed at the inlet of the burners of its row into the predetermined zone of the kiln, and the other for closing the cocks disposed at the outlet of the burners from the predetermined zone of the kiln.

3,580,555
METHOD AND DEVICE FOR HEAT TREATMENT OF METALS

Harlan G. Gearhart, La Canada, Calif., assignor to VST Corporation, Pasadena, Calif.

Filed May 6, 1968, Ser. No. 732,796
Int. Cl. C21d *1/66*
U.S. Cl. 266—4R **6 Claims**

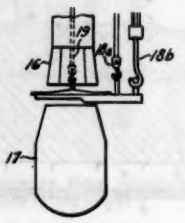


A furnace and resultant novel method for the heat treatment of metal parts, particularly of alloys containing titanium, comprising a heated retort maintained under continuous pressure by an inert gas with the retort feeding directly into a liquid quench bath. The parts are admitted to the furnace through a vacuum trap so that no air can enter the furnace to contaminate the material.

3,580,556
SAFETY SHIELD FOR A FUME-COLLECTING APPARATUS

John D. Roscoe, Baltimore, Md., assignor to Bethlehem Steel Corporation

Filed Apr. 18, 1968, Ser. No. 722,295
Int. Cl. F27d *21/00*
U.S. Cl. 266—16 **2 Claims**

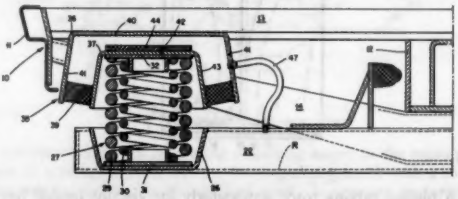


A safety shield placed and secured under a fume-collecting apparatus for a metallurgical furnace when the furnace is not operating, thereby preventing slag accumulated within and on the apparatus during furnace operation from falling upon workmen below. The shield may be placed under the apparatus by setting it on a rig, moving the rig under the apparatus, securing the shield under the apparatus, and subsequently removing the rig.

3,580,557
RAILWAY SPRING SUSPENSION

Albert G. Dean, Narberth, Pa., assignor to The Budd Company, Philadelphia, Pa.

Filed Jan. 30, 1969, Ser. No. 795,218
Int. Cl. B61f *5/04;* **F16f** *3/10, 13/00*
U.S. Cl. 267—3 **1 Claim**



Air spring apparatus consisting of two axially aligned cylinders connected by an elastomer ring which provides an air seal. The shear capacity of the ring is slight permitting relatively free axial movement between the cylinders but is substantially incompressible to compression loads to prevent relative lateral movement of the cylinders.

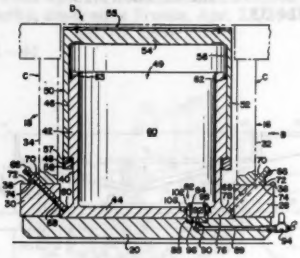
3,580,558
CUSHION MOUNTING IN PUNCH PRESS

Robert A. Helrigel, Hastings; James R. Brownell, Delton; Roderick K. Ward, and Harry E. Keithley, Hastings, Mich., assignors to E. W. Bliss Company, Canton, Ohio

Filed Jan. 8, 1969, Ser. No. 789,868
Int. Cl. F16k *9/31*
U.S. Cl. 267—114 **4 Claims**

A machine press bed assembly including an air cushion seated in the press bed, air input means integral with the press bed floor, aperture means in an end wall of the cushion

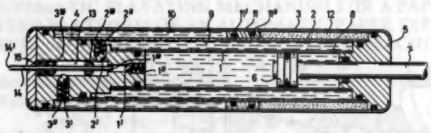
accommodating said air input means, and holddown means penetrating the press bed sides engaging the cushion, the cushion being removable from said press bed by disengaging the holddown means.



3,580,559
HYDROPNEUMATIC PISTON-CYLINDER ARRANGEMENT

Rudolf Spieth, Plochingerstrasse 156, Esslingen, and Gunter Otto, Lindenstrasse 3, Altbach, Germany

Filed Nov. 13, 1968, Ser. No. 775,472
Claims priority, application Germany, Oct. 1, 1968, P1800020.9
Int. Cl. F16g *9/08*
U.S. Cl. 267—126 **11 Claims**



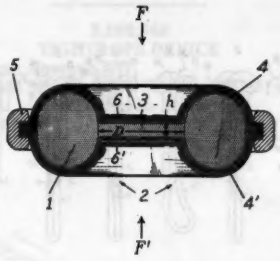
An improved hydropneumatic piston-cylinder arrangement, adapted to be blocked from the outside, with a fluid-filled and a gas-filled chamber, a piston mounted in the fluid-filled chamber with an externally projecting piston rod, wherein the chamber filled with fluid contains a fixed partition provided with passages for the fluid and the said passages are completely closing by blocking means adapted to be opened from the outside. The arrangement may be constructed as a tension spring or as a compression spring, wherein the compression spring construction is preferred for the lockable, stepless adjustment of table tops, driving seats and the like.

3,580,560
RESILIENT DEVICES

Jacques Jarret, Le Vesinet, and Jean Jarret, Fourqueux, France, assignors to Societe D'Exploitation Des Ressorts Auto-Amortisseurs Jarret, Paris, France

Filed Feb. 18, 1969, Ser. No. 800,227
Claims priority, application France, Feb. 19, 1968, 140,375
Int. Cl. F16f *1/37*
U.S. Cl. 267—153 **4 Claims**

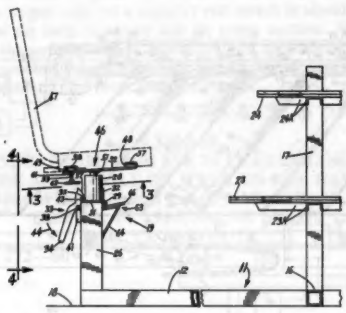
This invention is concerned with a compression spring in which an elastomeric mass is confined in a chamber whose volume is variable without any sliding joint, the chamber including a toric portion enclosing a cylindrical portion whose height is small compared to its diameter.



3,580,561
ARTICLE HOLDING APPARATUS

Reuben J. Krein, Forest City, Iowa, assignor to Stitchcraft Corporation, Forest City, Iowa

Filed Dec. 3, 1968, Ser. No. 780,707
Int. Cl. B25b *5/14*
U.S. Cl. 269—81 **13 Claims**



A jig for supporting a seat frame selectively in an upright position and in a horizontal position to facilitate mounting of backrest, cushion and covering on the seat frame. The jig has four spaced assembly stations each having an upright post pivotally carrying a support. Rotatably mounted on the support is a seat frame holder releasably attachable to a portion of the seat frame. A latch holds the support in an upright position. On release of the latch, the support can be pivoted into engagement with a stop to locate the seat in a generally horizontal position.

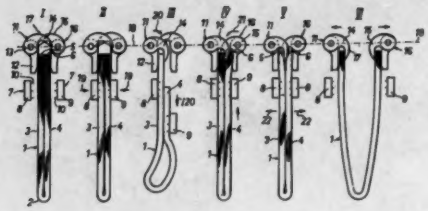
3,580,562
APPARATUS FOR OPENING FOLDED ARTICLES, SUCH AS NEWSPAPERS

Walter Reist, Hinwil, Switzerland, assignor to Ferag, Fehr & Reist AG, Hinwil, Zurich, Switzerland

Filed Jan. 29, 1969, Ser. No. 795,006
Claims priority, application Switzerland, Feb. 2, 1968, 1591/68
Int. Cl. B65h *39/02*
U.S. Cl. 270—54 **6 Claims**

Apparatus for opening folded newspapers which arrive from a printing press in imbricated succession and are separated into single copies, comprises conveyor means to carry the folded copies along in spaced relation. Opposite gripping jaws are provided to grip the two folded halves of the newspapers and cause a sliding movement of the two halves relative to each other in a direction at right angles to

the fold to expose one edge portion of the folded newspaper while further gripping jaws grip the exposed edge portion and the edge portion of the other half of the folded newspaper. The gripping jaws are attached to endless conveyor means to



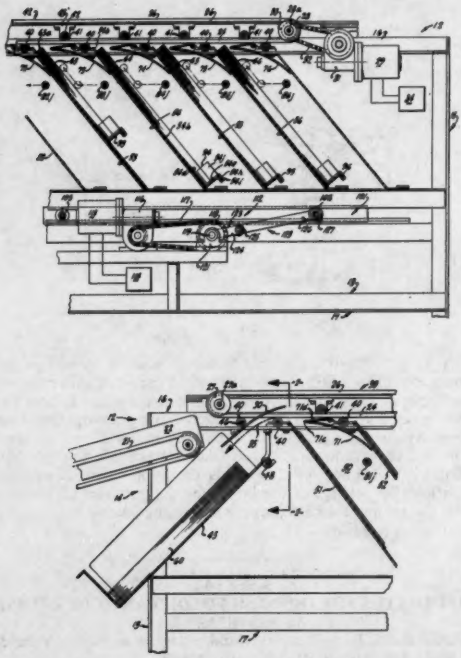
move along with the moving newspapers and are controlled to open the two halves of the newspapers, while further conveyor means supply enclosures or supplemental sheets to be slipped laterally into the opened newspapers.

3,580,563

COLLATING MACHINE FEEDING INTO OR OUT OF RACKS

Ernest D. Bassett, Box 545, Santa Barbara, Calif.

Filed Jan. 30, 1969, Ser. No. 795,153
Int. Cl. B65h *39/02*
U.S. Cl. 270—58 **3 Claims**



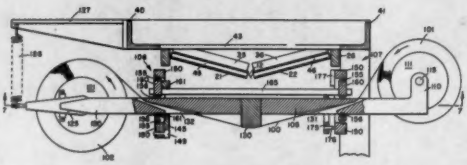
A horizontal elongated framework carries a plurality of transverse, inclined, parallel, paper-supporting racks. A conveying system on the machine, including a belt, transports sheets of paper emerging from a reproduction apparatus into predetermined ones of the racks. After the desired number of sheets have been placed in the racks in the appropriate sequence, various adjustments are made to the machine, including reversal of belt movement, enabling the machine to collate the sheets of paper previously assembled in the racks. The collating mechanism includes structure enabling the operator to adapt the machine to varying paper sizes, textures and weights.

3,580,564

FEEDING APPARATUS FOR NONRIGID SHEET

Ira D. Boynton, Lexington, and Willard G. Sylvester, Concord, both of, Mass., assignors to Apparel Research Foundation, Inc., Washington, D.C.

Filed Dec. 2, 1968, Ser. No. 780,397
Int. Cl. B65h *3/20*
U.S. Cl. 271—33 **5 Claims**



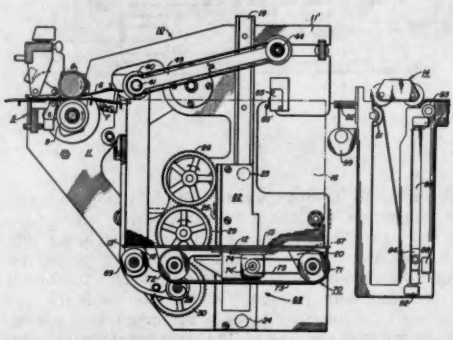
Apparatus for separating and delivering single sheets of a nonrigid material from a stack. The sheets in the stack are held in a slightly bent configuration and periodically a corner or peripheral area of the under surface of the bottom piece is exposed and pulled downwardly to allow horizontally movable separating means to move between the stack and the initially partially separated bottom piece to complete its separation, free it from the stack and permit it to drop by gravity.

3,580,565

SHEET FEEDING APPARATUS

Donald G. Mallory, Penfield, and Lyman H. Turner, Pittsford, assignors to Xerox Corporation, Rochester, N.Y.

Filed Dec. 11, 1968, Ser. No. 782,908
Int. Cl. B65h *3/06*
U.S. Cl. 271—39 **8 Claims**

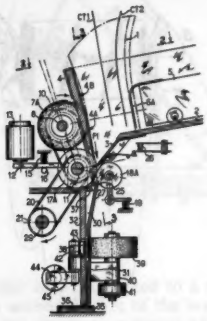


Sheet feeding apparatus incorporating a tray for storing precut sheets; first feeding means contactable with the topmost sheet of the precut sheet stock to feed precut sheets forward in seriatim; means to raise the tray to maintain the topmost sheet of the precut sheet stack in operative contact with the first feeding means as precut sheets are removed therefrom; second feeding means disposed under and jointly movable with the tray and cooperable with the base of the tray to form a passageway for feeding of ready cut sheets from a roll stock converter forward; and aperture means in the tray base enabling the first feeding means to drivingly contact the second feeding means when the tray is empty following raising of the tray to a maximum height.

3,580,566
ASYNCHRONOUSLY CONTROLLED ARRANGEMENT FOR FEEDING RECORD CARDS

Jacques Vasse, L'Hay les Roses, France, assignor to Societe Industriell Bull-General Electric, (Societe-Anonyme), Paris, France

Filed Apr. 14, 1969, Ser. No. 815,846
Claims priority, application France, Apr. 23, 1968, 149,082
Int. Cl. B65h *1/06*
U.S. Cl. 271—41 4 Claims

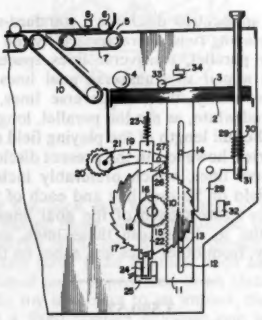


A card-feeding arrangement comprising a friction roller controlled by an electromagnet for advancing a card through a throat as far as driving rollers and a detector. A pulse generator receives a control pulse for feeding a card, transmits in response a first pulse to the electromagnet through a first switch and thereafter a signalling pulse through a second switch; the arrival of a card in the detector transmits a pulse which opens the switches and hence deenergizes the electromagnet and prevents the transmission of the signalling pulse.

3,580,567
AUTOMATIC ELEVATING MECHANISM FOR A PAPER FEED PLATFORM OF AN AUTOMATIC PAPER FEED DEVICE FOR USE WITH A PHOTOCOPYING MACHINE, PRINTING PRESS, OR THE LIKE

Hideo Hashimoto, Koshigaya-shi, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Aug. 27, 1968, Ser. No. 755,539
Claims priority, application Japan, Aug. 31, 1967, 42/55507
Int. Cl. B65h *1/18*
U.S. Cl. 271—62 3 Claims

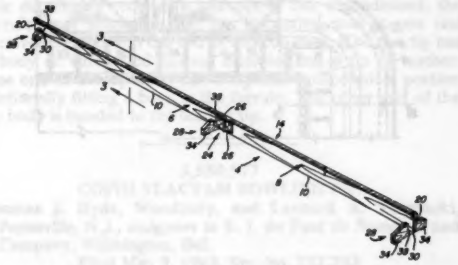


When the height of a stack of papers to be copied or printed falls below a predetermined level, the level of the stack is sensed by a sensing roller which closes the circuit for a solenoid through a microswitch attached to the sensing roller. A blocking plate is pulled downwardly by the solenoid and a constantly reciprocating engaging pawl is thereby allowed to engage a ratchet wheel, thereby moving upwardly a rack in mesh with a pinion integral with the ratchet wheel, whereby a paper feed platform supported by the rack can be elevated up to a predetermined level.

3,580,568
TIGHTROPE DEVICE

Guthrie B. Stone, Honeoye, N.Y.

Filed July 29, 1968, Ser. No. 748,353
Int. Cl. A63b *23/04*
U.S. Cl. 272—60 4 Claims

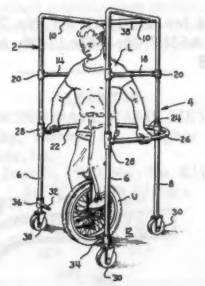


A stout rope is glued or otherwise fastened in a groove atop the upper edge of a support rail which is about 6 inches high and an inch more or less in cross section. The lower edge of the support rail is retentively but removably seated in keeper notches provided in upper edge portions of longitudinally spaced transverse footlike blocks.

3,580,569
TRAINING FRAME FOR USE IN LEARNING HOW TO RIDE A UNICYCLE OR WALK ON THE HANDS

Henry Allen Wilson, General Delivery, Miami Beach, Fla.

Filed Oct. 14, 1968, Ser. No. 767,336
Int. Cl. A63b *69/16*
U.S. Cl. 272—60 2 Claims

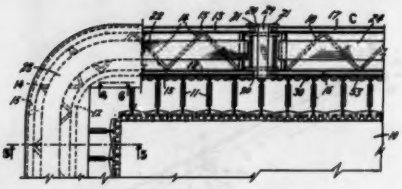


A unicycle training device in the form of a mobile frame open at the front to the supporting floor between vertical side rails that extend materially above the head of the learner when mounted on the seat of a unicycle between outwardly curved horizontal side rails which are adapted to be grasped by the hands of the learner, who must have freedom for balancing gyrations when so mounted prior to propelling the unicycle through the open front of said frame free of said rails and for other training in balancing free of said frame. The device comprises a pair of U-shaped members mounted on casters and secured together by parallel brackets. The lower bracket is an arc of a circle and spaced about hip high from the floor.

3,580,570
FOLDABLE TRAMPOLINE

Robert M. Fenner, and Donald E. Hamilton, Englewood, Colo.

Filed June 11, 1968, Ser. No. 736,043
Int. Cl. A63b 5/00
U.S. Cl. 272—65 8 Claims

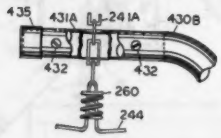


Two U-shpaed, trussed end frames hingedly connected together at their terminal extremities by straight, trussed side frames so that the end frames may be folded over the side frames for storage or opened out into the plane of the side frames to form an open, rectangular, peripheral bed frame which tensionally supports a conventional trampoline bed. Foldable leg elements hingedly mounted below said side frames for supporting the latter from the floor and foldable leg-bracing elements hingedly mounted below said end frames for maintaining said leg elements in the proper supporting positions, said frames being covered by cushioned deck pads which form a deck-way completely about said trampoline bed.

3,580,571
CHAIN SWING

Martin Green, Mahwah, N.J., assignor to Blazon, Inc., Jamestown, Pa. Division of Ser. No. 587,455, Oct. 18, 1966, abandoned.

Filed Jan. 27, 1969, Ser. No. 798,575
Int. Cl. A63f 7/06; A47c 15/00; A47d 13/10
U.S. Cl. 272—85 3 Claims

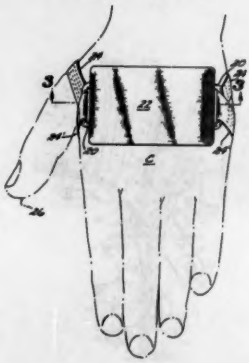


A chain swing for an outdoor amusement device having four chains supporting a bar, curved seats which are held apart by spacebars and held fast to the chains by spring pin arrangements, the spring pin arrangements including springs interposed between the bottom of the spacebar and extensions or wings of the spring pin arrangement for resilient cushioning of said seats.

3,580,572
BOWLER'S EQUALIZING WEIGHT

Richard A. Strafford, 7200 Cerritos Ave. Apt. A, Stanton, Calif., and William J. Davis, 8652 San Carlos Ave., Stanton, Calif.

Filed Nov. 13, 1968, Ser. No. 775,409
Int. Cl. A63b 71/14
U.S. Cl. 273—54 1 Claim

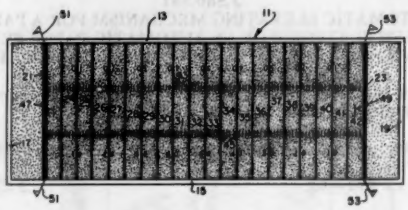


An equalizing weight of elongate arcuate configuration that substantially conforms to the exterior surface of the hand or wrist, and may be removably secured thereto to improve the performance of the bowler using the same.

3,580,573
FOOTBALL FIELD AREA IDENTIFICATION MEANS

Michael F. Noonan, 136 Church St., Plymouth, Pa., and James J. Fisher, 11 Franklin St., Larksville, Pa.

Filed Apr. 22, 1968, Ser. No. 723,355
Int. Cl. A63b 67/00
U.S. Cl. 273—55 10 Claims



The present application discloses a standard-sized, rectangular football playing field characterized by the fact that it is marked off by parallel, transverse lines spaced every five yards between a pair of transverse goal lines spaced 100 yards apart. Normally, these transverse lines, called yard lines, are colored white, as are the parallel, longitudinal lines which extend the full length of the playing field and define its lateral boundaries; however, in the present disclosure, certain of the transverse lines, which preferably include the goal lines, the midfield or 50-yard line and each of the six transverse yard lines nearest each of the goal lines are colored other than white to distinguish these lines, and the zones defined thereby, from other lines and zones on the field.

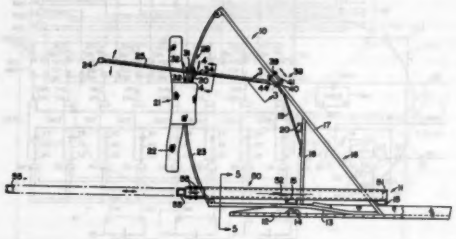
3,580,574
FOOTBALL BLOCKING SLED

John C. Hornak, 617 Blossom Drive, and Douglas F. Thompson, 2329 "G" St., Lorain, Ohio

Filed Apr. 18, 1969, Ser. No. 817,341
Int. Cl. A63b 67/00
U.S. Cl. 273—55 10 Claims

Means are disclosed for limiting the height at which a football player may strike the contact pad on a blocking sled of

the type comprising a base, a support and a resilient member. The height-limiting means include a generally horizontally extending interference member capable of being positioned at a location spaced from the contact pad and at a predetermined height from the ground, and means for securing that member to the training sled so that the horizontal member effectively limits the height at which the player may contact



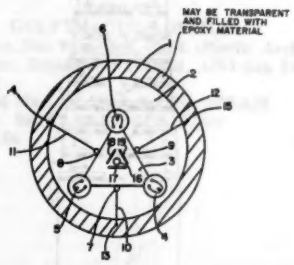
the sled. The member may be pivoted to a neutral position when not in use. A second feature of the invention includes means for causing the player to maintain his feet at least a predetermined distance apart during his line charge. The stance-extending means includes a telescoping member having a predetermined width. Both the height-limiting means and the stance-extending means may be attached to existing training sleds, or may be integrally built into new sleds.

3,580,575

GAME DEVICE INCLUDING SELECTIVELY IMPACT OPERABLE LIGHTS

Sheridan D. Speeth, Buffalo, N.Y., assignor to Autotelic Industries Limited, Fort Erie, Ontario, Canada

Filed Sept. 27, 1967, Ser. No. 670,875
Claims priority, application Canada, Aug. 28, 1967, 998,855
Int. Cl. A63b *43/06*; A63h *33/26*
U.S. Cl. 273—58 **14 Claims**



An impact toy, such as a ball, capable of withstanding an impact and having three different colored lamps supported within the interior of the toy. A switch device having a movable contact and three fixed contacts each associated with a different colored lamp is provided in an electrical circuit so that when the toy is subject to an impact, the movable contact touches a fixed contact to cause one lamp to be illuminated. The selected fixed contact is dependent on the point of impact. In alternative embodiments, the lamps may be embedded in the wall of the ball or within a transparent epoxy resin material filling the interior of the ball. The impact toy may take the form of a punching toy simulating a human figure, include audible signalling devices and electrical circuits including transistors and capacitor-resistor networks.

3,580,576

BILLIARD CUE AND REPLACEABLE CUE TIP ASSEMBLY

Anthony Merola, Pittsburgh, Pa., assignor to Amerola Products Corporation, Pittsburgh, Pa.

Filed Apr. 30, 1968, Ser. No. 725,450
Int. Cl. A63d *15/12*
U.S. Cl. 273—70 **6 Claims**

A billiard cue having a ferrule secured to one end. The ferrule detachably receives a cue tip. In one embodiment, the ferrule is of aluminum and has a knurled stud at one end received in a bore in the end of the cue stick. The cue tip has a body of vulcanized fibrous material and a tip of leather. One end of the tip body has a tapered frustoconical portion frictionally fitting a bore in the ferrule. The other end of the tip body is bonded to the leather tip.

3,580,577

COPOLYLACTAM BOWLING PIN

Thomas J. Hyde, Woodbury, and Leonard A. Targonski, Pennsville, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 9, 1968, Ser. No. 727,793
Int. Cl. A63d *9/00*
U.S. Cl. 273—82 **8 Claims**

A bowling pin comprising a hollow elongated body made of a copolylactam composition containing at least 65 percent by weight polymerized caprolactam moieties, at least 1 percent by weight polymerized lactam moieties having from seven to 12 carbon atoms and N-alkyl pyrrolidone.

3,580,578

BOUNCING BALL GAME METHOD

James B. McCarthy, Verona, Pa., assignor to Game Innovations, Inc., Verona, Pa.

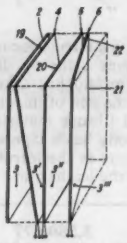
Filed June 9, 1969, Ser. No. 831,630
Int. Cl. A63b *63/00*
U.S. Cl. 273—95R **1 Claim**

Apparatus for playing a court game with a resilient ball is disclosed which includes a court divided into sections for opposing players having dividing lines and foul lines. At the end of each section there is a vertical plate or panel having a plurality of holes or goals each covered by a net. The object of the game is to bounce the ball into a goal at the opposite end. The goals are placed and shaped so as to require different degrees of skill for scoring and are assigned correspondingly different score points.

3,580,579
ELECTRIC TARGET APPARATUS FOR INDICATING HIT POINTS

Armin Scharz, and Oskar Scharz, Interlaken Bern, Switzerland, assignors to Polytronic S. A., Saint-Aubin (Neuchatel), Switzerland

Filed Feb. 21, 1969, Ser. No. 792,340
Claims priority, application Switzerland, Jan. 19, 1968, 861/68
Int. Cl. F41j 5/04
U.S. Cl. 273—102.2A 12 Claims

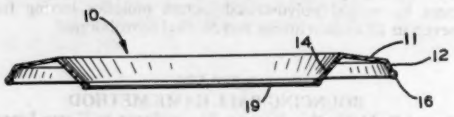


A target apparatus for automatically indicating the hit point of a projectile comprises a plurality of target elements mounted one behind the other, each element including two electrically insulated parallel sheets of electrically conductive material and included in an electric circuit, the distance between the two conductive sheets being less than the length of a projectile. At least two of the target elements are situated in planes which are inclined one relative to the other, whereby said relatively inclined target elements, when traversed by a projectile, produce pulses in timed sequence which are used to determine the hit point of the projectile on the target.

3,580,580
AERIAL SPINNING DISC

John D. Wark, 326 W. Lena Ave., Freeport, and Peter Schladermundt, 8 Park Ave., Bronxville, N.Y.

Filed Sept. 24, 1969, Ser. No. 860,485
Int. Cl. A63b 65/10; A63h 27/00
U.S. Cl. 273—106 4 Claims



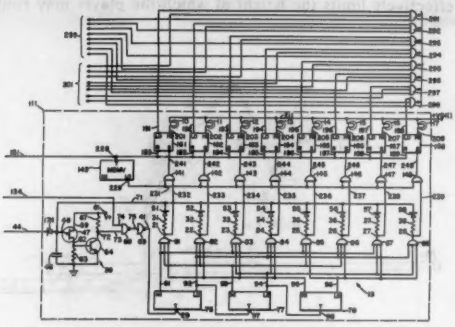
A spinning aerial device or "flying saucer". It is a disc with a centered circular opening and has a plurality of concentric sections including an annular body section with downwardly extending flanges formed along the inner and outer edges of said body section.

3,580,581
PROBABILITY-GENERATING SYSTEM AND GAME FOR USE THEREWITH

Richard C. Raven, Reno, Nev., assignor to Raven Electronics Corporation

Filed Dec. 26, 1968, Ser. No. 787,146
Int. Cl. A63b 71/06
U.S. Cl. 273—138A 13 Claims

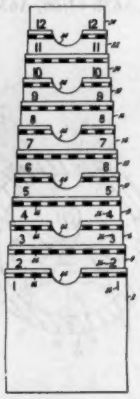
In order to select an event at random from a set of possible events, wherein each event has a preselected and different probability of being selected, an electrical circuit is provided for generating a continuous cyclic succession of electrical output signals each corresponding to one event in which the time duration of each signal is individually controlled and preset to provide a different time portion of the total combined time duration of all of the output signals and means are provided for interrupting this continuous train of output signals at an arbitrary point in time, whereby the output signal occurring at the time of this interruption is sensed and the event associated therewith is accordingly selected. Furthermore, a series of these circuits is disclosed in combination with a set of visual monitors for symbolically displaying the selection of events to provide a game for amusement and entertainment in which each event and combinations thereof is assigned a winning or losing value.



3,580,582
BOX GAME

Constantine P. Calamvotsakis, 1706 Brush Creek Blvd., Kansas City, Mo.

Filed Apr. 16, 1969, Ser. No. 816,756
Int. Cl. A63f 9/00
U.S. Cl. 273—139 3 Claims



A box game for selecting a winner from a group of players, or for designating one person from the group to pay a "party penalty," by means of a process and apparatus involving chance and a high degree of interest and suspense, the apparatus consisting of a series of nested and numbered boxes adapted to be removed one at a time in turn by the players, whereby eventually to disclose a "token piece" concealed between any two successive boxes, and a set of dice adapted to be rolled by a nonplaying "dealer," who then places the token in accordance with the roll of the dice and assembles the boxes preparatory to play. The players may preselect and record the number of the box in which they believe the token to be concealed.

3,580,583

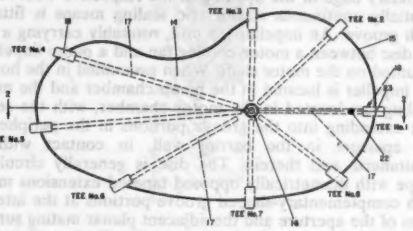
PUTTING GREEN INCLUDING MEANS FOR SEQUENTIALLY RETURNING HOLED-OUT BALLS TO PERIPHERALLY SPACED BALL DISPENSERS

Joseph A. Gentiluomo, 1456 Belmont Ave., Schenectady, N.Y.

Continuation of application Ser. No. 550,664, May 17, 1966. This application Jan. 21, 1969, Ser. No. 796,284

Int. Cl. A63b 67/02

U.S. Cl. 273—176 6 Claims



A continuous putting green surface having a cup, undulations, and surface texture similar to a golf course putting green, thereby, providing players with varied length putts in which the ball line-of-roll may envolve level, uphill, downhill, or sidehill travel or any combination thereof, either against, across, or with the grain of the putting surface or any grain combination thereof. Utilization of automatic ball-dispensing and ball return means eliminates player bending or stooping for balls both at the putting tees and at the cup. When the ball-dispensing means releases a ball upon the putting green, the ball return means is translated into ball-receiving position underneath the cup. A holed out ball will enter the ball return means and roll by gravity to the ball-dispensing means for subsequent reuse. This returned ball will initiate operation of a second ball-dispensing means to discharge a ball and cause the previously used ball return means to retract, and the ball return means associated with the second dispensing means to move into ball-receiving position underneath the cup. This sequence of operations will continue until balls are putted and holed out from the plurality of putting tee positions located on the putting green periphery.

3,580,584

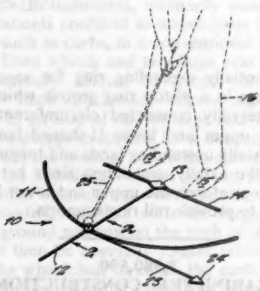
GOLF PRACTICE DEVICE

David P. Trosko, San Francisco, Calif. (Pacific Architects & Engineers, Inc., Employee #1-02661, APO San Francisco, Calif. 96307)

Filed Mar. 10, 1969, Ser. No. 805,420

Int. Cl. A63b 69/36, 57/00

U.S. Cl. 273—186 1 Claim



A practice device for golfers for teaching the basic principles of driving, the device comprising a flexible rope or chord for defining an arc of travel for a golf club head, a cross rod for defining the position of the player's feet, a forward extending rod extending from the cross rod a plastic cup upon which a golf ball is supported, and a straight bar extending from the plastic cup into the direction toward the green.

3,580,585

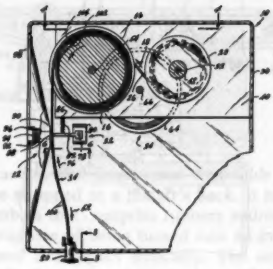
DEVICE FOR REPRODUCING SOUNDS IN TOYS

Edwin O. Stastny, Santa Ana; Lester T. Stormon, Redondo Beach, and Anson Sims, Manhattan Beach, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Continuation of application Ser. No. 716,543, Mar. 27, 1968, now abandoned. This application Nov. 26, 1969, Ser. No. 873,742

Int. Cl. G11b 3/00

U.S. Cl. 274—1A 3 Claims



A sound-producing tape is wound on a reel having a spring-driven rewind. As the tape is pulled from the reel past a sound reproducer and a pivoted finger, the finger is pivoted due to its frictional engagement with the tape allowing the tape to inoperatively pass the sound reproducer. Upon release, the tape is automatically rewound onto the reel and is brought into operative association with the sound reproducer by the pivoted finger so that sounds are reproduced only during the rewinding operation.

3,580,586

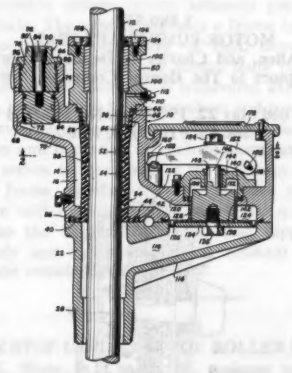
INFLATABLE PACKING FOR STUFFING BOXES

Alvin G. Burns, 1020 E. 34th St., and Sheldon M. Miller, 4636 S. Wheeling, Tulsa, Okla.

Continuation-in-part of application Ser. No. 633,664, Apr. 12, 1967, now Patent No. 3,471,156. This application Oct. 3, 1969, Ser. No. 863,588

Int. Cl. F16j 15/40, 15/00, 9/00

U.S. Cl. 277—3 4 Claims



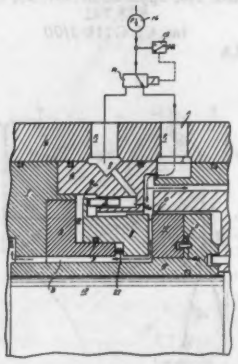
An inflatable packing gland for stuffing boxes utilized around the reciprocal polished rod of a producing oil well wherein the pressure of the packing member against the outer periphery of the polished rod may be automatically maintained at the most desirable level regardless of wear on the inner periphery of the stuffing gland.

3,580,587

CONTACT-FREE HYDROSTATIC SEAL

Dieter Born, Hessheim; Peter Stech, and Werner Huebner, Roxheim, Germany, assignors to Klein, Schanzlin & Becker A.G., Frankenthal, Pfalz, Germany

Filed Jan. 31, 1968, Ser. No. 702,001
Claims priority, application Germany, July 22, 1967, Aug. 11, 1967, DK62907;DK63081
Int. Cl. F16j *15/00*; F16i *17/00*
U.S. Cl. 277—3 3 Claims



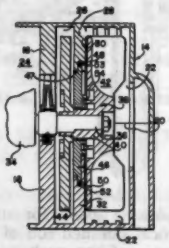
A contact-free hydrostatic seal wherein a rotary first annular sealing element defines with a second annular sealing element a gap for leak fluid. The second sealing element is biased toward the first sealing element by closing springs which tend to reduce the width of the gap. A pump delivers fluid into the gap to oppose the action of closing springs and to prevent direct contact between the sealing elements. When the pressure of fluid drops to such an extent that it can be overcome by the bias of closing springs, a safety device becomes operative to oppose such bias and to hold the second sealing element away from the first sealing element. The safety device includes a set of plungers which are subjected to fluid pressure and engage the second sealing element when the pressure of fluid in the gap drops to a certain minimum permissible value, or a lever which is pivoted into engagement with the second sealing element by one or more strong springs when such strong spring or springs overcome the fluid pressure at a time when the fluid pressure is too low to prevent the closing springs from moving the second sealing element into frictional engagement with the first sealing element.

3,580,588

MOTOR-PUMP SHAFT SEAL

Howard L. Allen, and Charles D. De Graff, North Canton, Ohio, assignors to The Hoover Company, North Canton, Ohio

Filed May 22, 1969, Ser. No. 826,798
Int. Cl. F16j *9/00*, *15/00*
U.S. Cl. 277—32 5 Claims



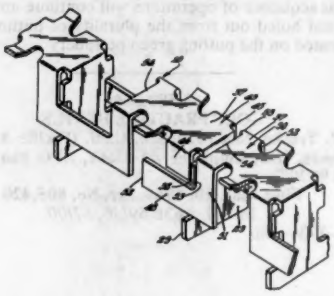
An integral motor-pump of a wet pickup floor conditioner has a housing comprising pump and motor chambers. The housing is generally divided along a plane forming two housing sections each having an integral web portion extending between the pump and motor chamber portions therein. When the housing sections are assembled the mating web portions define a barrier wall having an aperture through which an output shaft, from a motor mounted in the motor chamber, extends. A groove is formed in the planar mating surface of each of the housing sections around the pump chamber. The grooves in the mating surfaces are each connected at their ends by a groove portion in the periphery or boundary edge of the opening in the respective web. A substantially continuous elastomeric sealing means is fitted in each groove. An impeller-fan unit, rotatably carrying a sealing disc between a motor-cooling fan and a pump impeller is mounted on the motor shaft. When assembled in the housing the impeller is located in the pump chamber and the motor-cooling fan located in the motor chamber, with the sealing disc extending into the groove portions in the periphery of the aperture in the barrier wall, in contact with the elastomeric seal therein. The disc is generally circular in shape with diametrically opposed tapered extensions mating with complementary-shaped groove portions at the intersections of the aperture and the adjacent planar mating surfaces of the web. A generally circular, axially offset, portion of the disc lies within the circular aperture and has a pair of diametrically opposed ears. Each ear has a flat, the flats lying flush against planar surfaces of the web of one of the housing sections adjacent the aperture. Arcuate opposing surfaces on the ears cooperate with camming cutouts in the internal web of the other housing section at the intersection of the planar mating surfaces and the central aperture to center the sealing disc in the aperture in the barrier wall.

3,580,589

CIRCUMFERENTIALLY EXPANDING OIL CONTROL RING

Herbert F. Prasse, Town and Country, and Loyd D. Hensley, Creve Coeur, Mo., assignors to Ramsey Corporation, St. Louis, Mo.

Filed May 31, 1968, Ser. No. 733,661
Int. Cl. F02f *5/00*; F16j *9/00*
U.S. Cl. 277—140 14 Claims



A circumferentially expanding ring for spacing and expanding rail rings in a piston ring groove which ring has a plurality of integrally connected circumferentially spaced sections having upper and lower U-shaped lands integrally connected by axially upstanding lands and tongues projecting from some of the axially upstanding lands between the U-shaped lands to reinforce the upper and lower lands against collapse and/or to provide rail ring supports.

3,580,590

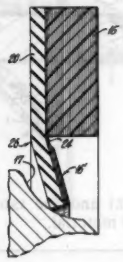
BEARING SEAL CONSTRUCTION

John F. Zotter, Southington, Conn., assignor to Textron Inc., Providence R.I.

Filed Nov. 7, 1969, Ser. No. 874,927
Int. Cl. F16j *15/32*
U.S. Cl. 277—227 5 Claims

The invention contemplates a laminated seal construction and method utilizing a flat annular sheet of flexible material,

such as elastomeric material, laminated to a backing material, which at an axially thick portion defines a body, and which at an axially thin portion defines a seal member to be axially resilient deflected with respect to the body. The method of the invention calls for removing backing material after the laminating step, the removed material affording a

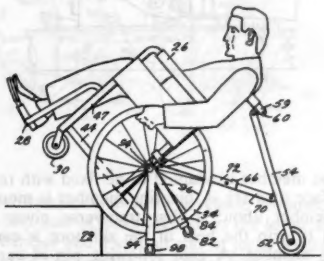


remainder which meets all requirements as to concentricity, circumferential uniformity of action, and the like. The material-removing step may be so characterized as to provide a local region for axial flexure, radially spaced from the region of wiping contact with the bearing ring to which it is sealingly engaged.

3,580,591
WHEELCHAIR ATTACHMENT

H. Franklin Coffey, Albuquerque, and Samuel T. Powers, Tijeras, both of, N. Mex., assignors to Lovelace Foundation for Medical Education and Research, Albuquerque, N. Mex.

Filed Dec. 24, 1968, Ser. No. 786,695
Int. Cl. B62b *5/02*
U.S. Cl. 280—5.32 **26 Claims**

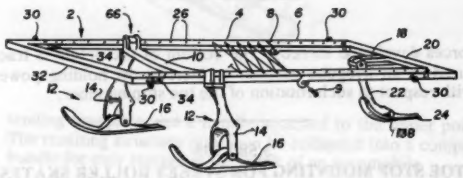


Wheelchair attachments, ordinarily installed in pairs, for enabling patients confined to wheelchairs to easily negotiate obstacles, such as curbs, in a conventional wheelchair having two small front wheels and two large rear wheels which the patient manually rotates to propel and maneuver the wheelchair. Each attachment includes an elevating member attachable to an axle of one of large rear wheels and having one or more prongs extending for a distance greater than the distance from the point at which the elevating member is attached to the wheelchair to the ground so that to mount a curb or similar obstacle the wheelchair can be made to stand on the elevating member with the large wheels elevated above the ground and against the curb or obstacle. The large wheels can then be manually rotated while against the curb to cause the wheelchair to climb the curb. The attachments of the invention must be used with a second attachment which includes an extendible wheel, or dolly, which is connectable to the wheelchair through supporting members and which can be manually extended backwards by the patient to a locked position. When both dollies of a pair of attachments are in this extended and locked position, the wheelchair can be tilted backwards manually to rest in a stable, tilted position on the two large wheels and the extended dollies or wheels with the two small front wheels, or casters, elevated. Curbs and other obstacles can then be simply negotiated in this tilted position by manually rotating the two large wheels so as to cause the wheelchair to stand on the pair of elevating members and then to climb the obstacle.

3,580,592
COMBINATION DEER-CARCASS SLED AND CHAISE LOUNGE

Eugene E. Schrecengost, R.D. #1, Box 65, Apollo, Pa.

Filed Jan. 23, 1969, Ser. No. 793,469
Int. Cl. B62b *13/16, 13/18*
U.S. Cl. 280—8 **5 Claims**

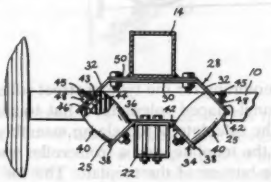


A deer-carcass sled is provided that folds and may conveniently be strapped to a hunter's back. It has ground-contacting members that comprise runners and/or tires, and are preferably capable of being turned into an inoperative position to afford a compact structure. The structure further comprises a back member that attaches to the sled or dolly to convert it into a chaise lounge.

3,580,593
ANTISWAY SUSPENSION SYSTEM FOR AN AXLED VEHICLE

Lynn H. Sprunger, P.O. Box 78, Albion, Ind.

Filed Apr. 14, 1969, Ser. No. 815,575
Int. Cl. B60g *9/00*
U.S. Cl. 280—124 **6 Claims**



A suspension system having antisway properties for an axled vehicle. The vehicle includes a frame having a pair of spaced longitudinal members. A rigid elongated support member is spaced below and substantially parallel to each longitudinal frame member. A transverse axle is positioned below the longitudinal frame members and is secured to each support member intermediate the end portions thereof. A suspension unit is carried by each support member end portion and serves to interconnect the adjacent overlying longitudinal frame member with the support member. Each suspension unit includes upper and lower spaced brackets secured to the longitudinal frame and support members respectively and interconnected by resilient means which transmit the vehicle load to the axle.

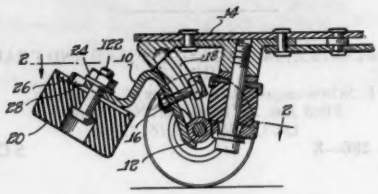
3,580,594
TOE STOP MOUNTING FOR ROLLER SKATES

Gordon K. Ware, St. Charles, Ill., assignor to The Chicago Roller Skate Company, Chicago, Ill.

Filed May 20, 1969, Ser. No. 826,215
Int. Cl. A63c *17/14*
U.S. Cl. 280—11.2 **1 Claim**

A toe stop mounting in which a rib or detent projects downwardly from the toe stop support for interlocking en-

gagement with one of a plurality of grooves formed in the upper end of the toe stop member to oppose rotation of the toe stop member in response to offcenter frictional braking



forces developed thereby. The bottom of the detent is fractured in an irregular manner to increase its holding power with respect to such rotation of the toe stop member.

3,580,595

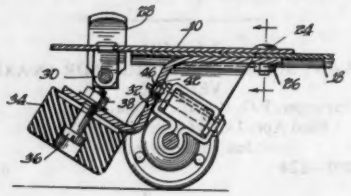
TOE STOP MOUNTING FOR STREET ROLLER SKATES

Gordon K. Ware, St. Charles, Ill., assignor to The Chicago Roller Skate Company, Chicago, Ill.

Filed June 4, 1969, Ser. No. 830,351

Int. Cl. A63c *17/14*

U.S. Cl. 280—11.2 **5 Claims**



A toe stop mounting for the type of street roller skates that contain a channel-shaped soleplate, a flat toeplate attached to the top of the soleplate, a toe clamp assembly attached to the bottom of the toeplate, and a front roller truck assembly attached to the bottom of the toeplate. The toe stop mounting includes an elongated strap of rigid material which is attached to the bottom of the channel-shaped soleplate between the side edges thereof and which is shaped to depend downwardly from the soleplate in front of the front roller truck assembly and then to extend upwardly toward the front end of the toeplate. A resilient toe stop member is attached to the bottom surface of the elongated strap in the upwardly extending region thereof. The strap is approximately equal in width to the inside dimension of the channel-shaped soleplate so that it receives lateral support from the side edges of the soleplate and is shaped so as to make contact with the front portion of the front roller truck assembly and toe clamp assembly for support purposes.

3,580,596

SKI CONSTRUCTION

Franz Volkl, Straubing, Lower Bavaria, Germany, assignor to Franz Volkl, OHG, Straubing Lower Bavaria, Germany

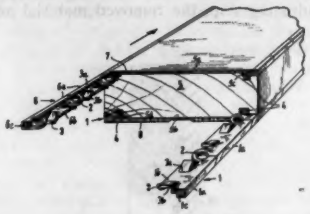
Filed Feb. 25, 1969, Ser. No. 801,956

Claims priority, application Germany, Feb. 27, 1968, P1,678,299

Int. Cl. A63c *5/04*

U.S. Cl. 280—11.13 **20 Claims**

An edge strip for a ski is formed of a plurality of separate segments interconnected by bridge pieces which extend, at least for a portion of their length, in a direction transverse to the longitudinal direction of the strip. The individual segments are fixed to the ski by means of tabs fitted into grooves



in the body of the ski and the tabs are held within the grooves by an adhesive material.

3,580,597

HEEL DOWNHOLDER FOR SAFETY SKI BINDINGS

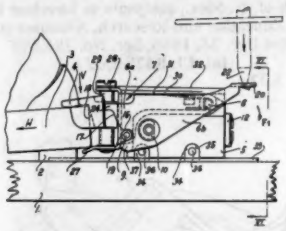
Jean Joseph Alfred Beyl, 1, rue Devieux Robelin, Nevers, France

Filed Mar. 18, 1969, Ser. No. 808,112

Claims priority, application France, Mar. 22, 1968, 144,577

Int. Cl. A63c *9/00*

U.S. Cl. 280—11.35T **7 Claims**



A base member is adapted to be fixed with respect to the top surface of a ski. A pivoting member is mounted on the base member about a first transverse pivot pin. A jaw adapted to grip the heel of the ski boot is carried by the pivoting member. A cam following pin is carried by the pivoting member. A third transverse pivot pin is rotatably mounted on the base member. A pivoting lever is rigid with the third transverse pivot pin. A cam member for controlling the movement of the cam following pin from a first to a second position with respect to the cam member is carried by the pivoting lever. The downholder is at a lowermost position when the cam following pin is at its first position. The pivoting lever is adapted to constitute a release lever for controlling the retraction of the cam member. The third rotary transverse pivot pin has a planar abutment surface including a pair of edges parallel to each other and to the axis of the third pivot pin. A piston having a complementary planar surface is adapted to contact the abutment surface. The plane containing the abutment surface is perpendicular to the axis of the piston when the downholder is in its lowermost position. A compression spring urges the piston against said edges.

3,580,598

TOBOGGAN

Robert C. de Pauw, 18 Edgewood Hills, East Peoria, Ill.

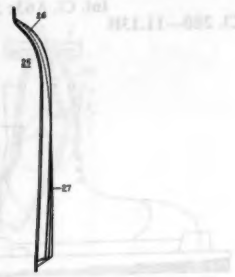
Filed Apr. 21, 1969, Ser. No. 817,763

Int. Cl. B62b *13/00*

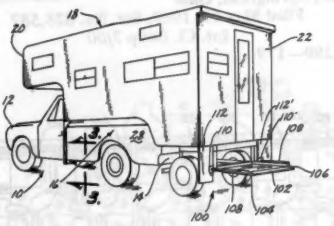
U.S. Cl. 280—18 **22 Claims**

A steerable toboggan having a transversely curved body

with longitudinal corrugations and steering ribs along each side. The steering ribs are deeper and narrower than the corrugations, and are curved with wider spacing at the front than at the rear.



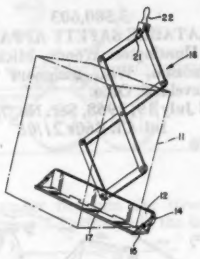
3,580,599
JACK AND TIEDOWN SYSTEM FOR A VEHICLE MOUNTED CAMPER
John N. Dodgen, and Kenneth R. Johnson, Humboldt, Iowa, assignors to Dodgen Industries, Inc., Humboldt, Iowa
Filed May 2, 1969, Ser. No. 821,183
Int. Cl. B62d *21/14*; B60p *3/32*
U.S. Cl. 280—34 10 Claims



A jack and tiedown system for a vehicle mounted camper including a first pair of jacks secured to the lower front corners of the camper and a second pair of jacks secured to the rearward end of the camper. The front jacks are adapted to be lowered into ground engagement at times to support the front end of the camper while the rear jacks are adapted to be lowered to the ground to support the rearward end of the camper at times. The vehicle has a pair of brackets secured to its frame which extends outwardly therefrom at opposite sides thereof and which are adapted to have the lower ends of the first pair of jacks connected thereto to tiedown the camper to the vehicle when the jacks are not being used to support the camper. The rear jacks are pivotally connected to the camper and are positioned rearwardly of the camper mud flaps to prevent the flaps from flapping in the wind when the second pair of jacks are not being used to support the rearward ends of the camper.

3,580,600
COLLAPSIBLE HANDTRUCK
Harry B. Caplin, 60 Copperfield Road, Worcester, Mass.
Filed May 7, 1969, Ser. No. 822,588
Int. Cl. B62b *1/04*
U.S. Cl. 280—36 3 Claims

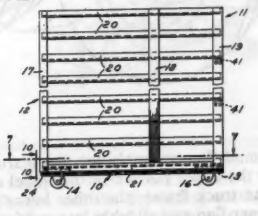
A collapsible handtruck comprises an upwardly extending baseplate to which a lower baseplate is hinged to form a support of generally L-shaped cross section. A pair of wheels are attached to the upwardly extending baseplate. A pantographic member, of the lazy tongs type, has its lower point attached to the center of the upper edge of the upwardly extending baseplate and a handle attached to the upper point. The resulting structure may then be collapsed into a compact bundle for easy storage in the trunk of an automobile.



3,580,601
SKATE DEVICE FOR TRANSPORTING LARGE OBJECTS
Ray P. Miles, 8575 W. Melody Lane, Macedonia, Ohio
Filed Apr. 30, 1969, Ser. No. 820,574
Int. Cl. B62b *3/04*
U.S. Cl. 280—47.13 3 Claims

The invention relates to a skate device for transporting unwieldly, large flat objects with ease. The device comprises an elongated base member containing a pair of brackets at each end and a clamping bracket member at its midsection. Rollers are provided on the bottom of the base member and are all in line. The end rollers are mounted slightly above the midsection roller to enable the skate to be tipped backward or forward on the end rollers for maneuverability. The skate is clamped to an edge of the flat object for transporting.

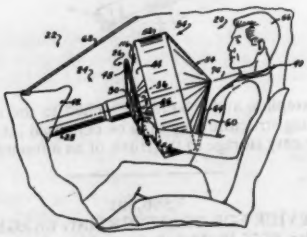
3,580,602
STORAGE RACK
Gerard E. Hebert, Livonia, Mich., assignor to Lockhart Manufacturing Corporation, Farmington, Mich.
Filed Dec. 12, 1968, Ser. No. 783,340
Int. Cl. B62b *5/00*
U.S. Cl. 280—79.3 11 Claims



The storage rack disclosed herein comprises a base, sides and a back which can be manufactured and shipped

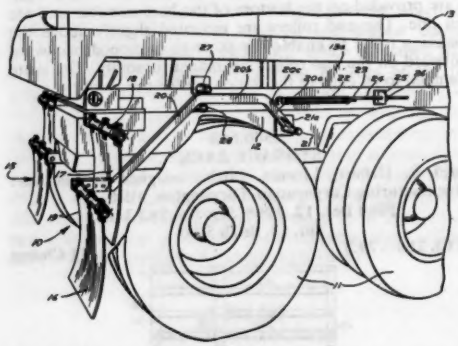
separately to a bakery or other user and can thereafter be readily assembled without welding to form the storage rack. The base, sides and back have interengaging means thereon which are engageable by a sliding movement.

3,580,603
INFLATABLE SAFETY APPARATUS
Richard Chute, Huntington Woods, Mich., and Charles O. Berryman, Madison, Wis., assignors to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed July 19, 1968, Ser. No. 746,131
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 **27 Claims**



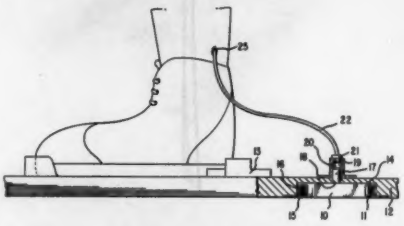
An improved safety apparatus for protecting the driver of a vehicle includes a confinement mounted on the steering wheel and having a circular cone portion which engages the torso of the driver when the confinement is expanded to thereby restrain movement of the driver during a collision. The confinement is inflated from a collapsed condition to an expanded condition in such a manner as to engage the rim of the steering wheel with the confinement before engaging the torso of the driver with the conical portion of the confinement. After forward movement of the torso of the driver has been retarded by engagement with the confinement, the head of the driver engages the conical portion of the confinement.

3,580,604
MUD FLAPS FOR DUMP TRUCKS
Thomas F. Overend, 4379 Dart Ave., Minneapolis, Minn.
Filed Sept. 18, 1969, Ser. No. 859,132
Int. Cl. B62d *25/16*
U.S. Cl. 280—154.5 **8 Claims**



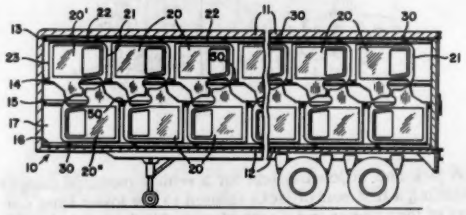
A two-part mud flap assembly for dump trucks, one flap being adjacent the upper portion of the wheel and being stationary with the truck frame; the other lower flap normally lapping the upper flap and slidable into confronting relation with the upper flap. A swingable arm mounting the lower flap normally held down by the dump box; a spring to swing the arm and lower flap upwardly as the dump box is raised.

3,580,605
HYDRAULIC STEERING AND BRAKING SYSTEM FOR SNOW SKIS
Nathan Shreve Spitler, 1802 Briar Ridge Court, McLean, Va.
Filed Oct. 29, 1969, Ser. No. 872,053
Int. Cl. A63c *5/06*
U.S. Cl. 280—11.13H **8 Claims**



A pair of rudder elements are disposed on a ski behind and, respectively to the right and left side of the boot area and are normally maintained in a retracted ineffective position by springs engaged between the rudders and the ski. A pair of elongate hydraulic lines are each connected at one end to one of the rudders and extend under the clothing of the skier whereby a compressible ball at the other end of the lines may be carried on the thumbs of the skier for actuating the rudders selectively with thumb pressure on the balls.

3,580,606
CARGO LOADING AND SUPPORT SYSTEM
Millard C. Wagner, Urbana, Ohio, assignor to Thomas Kappel, Inc., Springfield, Ohio
Filed May 19, 1969, Ser. No. 825,587
Int. Cl. B60p *7/00*
U.S. Cl. 280—179 **9 Claims**



A system for loading and supporting several truck cabs in a van for shipment with the cabs stowed in nested but spaced relationship so that a maximum number of cabs may be shipped without damage to the cabs through contact with each other or the interior of the van. Each cab has a pair of bars having wheels at their outer ends attached to it and extending transversely of the van with the wheels engaging tracks running longitudinally of the van, and stops are associated with the tracks to prevent movement of one of the bars and stabilize the load during shipment.

3,580,607
BICYCLE SUPPORT
Theodor Pletscher, Zurich, Switzerland, assignor to Gebruder Pletscher, Marthalen, Zurich, Switzerland
Filed July 9, 1968, Ser. No. 743,405
Claims priority, application Austria, July 10, 1967, 6437/67
Int. Cl. B62h *1/02*
U.S. Cl. 280—301 **3 Claims**

A bicycle support comprises a socket to be secured to the horizontal rear fork members of a bicycle frame, a support arm having one end pivotally connected to said socket for tilting movement of the arm from a position of rest into

operating position and held in one or the other of said positions by a tilting spring acting eccentrically on the arm with respect to its pivoting axis to urge the arm against an abutment on the socket, a spring counterbearing being associated

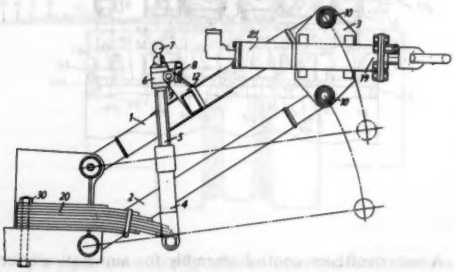
with said pivotally connected end of the arm. The spring counterbearing is formed by an arched surface, for example by the surface of a ball lodged in a trough formed on the pivotally connected end of the support arm, or by a concave arched surface of the trough itself.

3,580,608

TRAILER TOWING ARRANGEMENT

Charles Clark Simpson Grant, Kempston, Bedford, England, assignor to Ibbett Engineering Company Limited, Bedford, England

Filed Jan. 13, 1969, Ser. No. 790,634
Claims priority, application Great Britain, Jan. 19, 1968, 2,946/68
Int. Cl. B60d *1/16*
U.S. Cl. 280—405 **5 Claims**



The towing arrangement for attachment to a vehicle having two pairs of parallel arms having pivotal mountings at each end for connection at one end to a vehicle and at the other end to a tow body housing thereby forming a wishbone arrangement converged towards the housing. A connector which fits a coupling on another vehicle is attached to the tow body housing. A spring or hydraulic element is provided between the vehicle and the paris of parallel arms to exert an upward force on the latter.

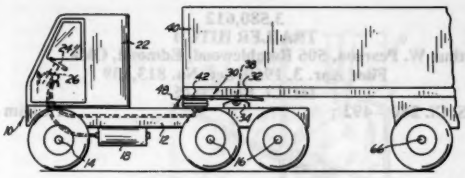
3,580,609

FIFTH WHEEL WITH LOAD-TRANSFERRING DEVICE

Michael F. Paielli, 6841 Harding, Taylor, Mich.

Filed Dec. 8, 1969, Ser. No. 883,072
Int. Cl. B62d *53/00*
U.S. Cl. 280—405 **4 Claims**

A fifth wheel for connecting tractors and trailers consisting of a pivoted coupling member having on the forward end thereof a hinged member supported by a pair of inflatable air bags seated on the tractor frame. The air bags are operatively connected into the compressed air system of the tractor through a control valve which enables the driver to distribute



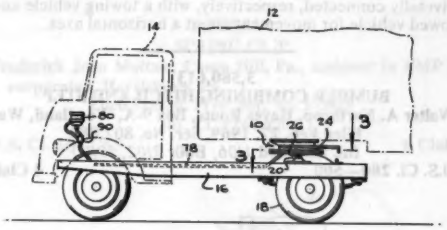
the load in the trailer between the steering, driving and trailer axles by varying the pressure in the inflatable air bags.

3,580,610

AUTOMATIC ANTIJACKKNIFING CONTROL FOR ARTICULATED VEHICLES

Robert C. Warren, 26 Salem Ave., and Robert G. Adams, P.O. Box 508, Carbondale, Pa.

Filed May 6, 1969, Ser. No. 822,201
Int. Cl. B62d *53/10*
U.S. Cl. 280—432 **5 Claims**



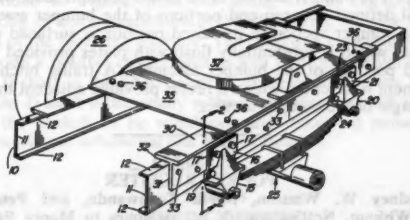
A device for preventing the trailer portion of a vehicle from jackknifing by automatically restraining the trailer portion and the tractor portion of the vehicle from moving relative to each other, except during right- or left-hand steering maneuvers.

3,580,611

FIFTH WHEEL SUPPORT SYSTEM

Lewis F. McNitt, Bay Village, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

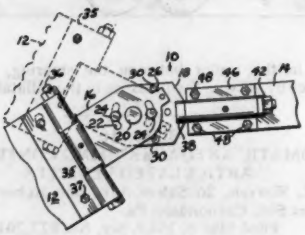
Filed Jan. 27, 1969, Ser. No. 794,126
Int. Cl. B62d *53/08*
U.S. Cl. 280—433 **3 Claims**



A right-angled or T-shaped element is secured to the web of a tractor (tractor-trailer combination) frame over its spring hanger supports. The flat area of the T is spaced from the channel flanges and the depending section may or may not extend into the area of spring hanger supports. If it does the spring hanger supports are initially made with an offset upper section into which the T-section can be inserted. The offset spring hangers can be originally provided with spacer

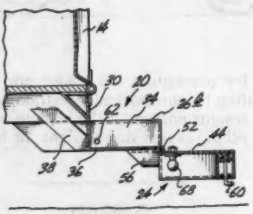
elements which are removed when the dependent section of the T-element is positioned and secured to the frame web sections.

3,580,612
TRAILER HITCH
Arthur W. Pearson, 506 Ramblewood, Edmond, Okla.
Filed Apr. 3, 1969, Ser. No. 813,139
Int. Cl. B60d 1/16
U.S. Cl. 280—492 **1 Claim**



A pair of pivotally interconnected horizontal plates are pivotally connected, respectively, with a towing vehicle and a towed vehicle for movement about a horizontal axes.

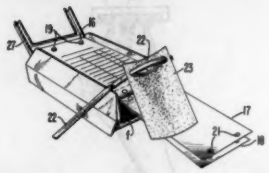
3,580,613
BUMPER COMBINING HITCH AND STEP
Walter A. Northrop, Hayes Route, Box 9-A, Woodland, Wash.
Filed Feb. 27, 1969, Ser. No. 802,882
Int. Cl. B60d 1/06; B60r 3/02, 19/00
U.S. Cl. 280—500 **4 Claims**



A vehicle bumper having a trailer hitch step construction including an elongated bumper assembly which, in operative position, is mounted at the end of a vehicle and in a position extending transversely of the vehicle. A bumper section hinged to the bumper assembly between its ends is swingable from a raised position rearwardly and downwardly to form a step. The bumper section in its raised position seats within a well defined between end portions of the bumper assembly. The bumper section in its raised position is surfaced with a plate which is substantially flush with plates provided in the end portions of the bumper assembly. A trailer hitch component is mounted within a recess provided adjacent the rear margin of the bumper section.

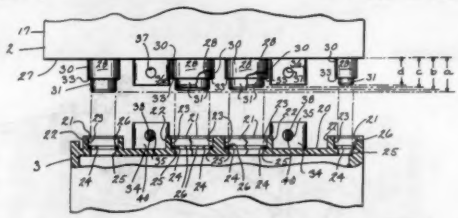
3,580,614
POCKET REGISTER
Rodney W. Winston, North Tonawanda, and Peter M. Witham, Nottingham, N.Y., assignors to Moore Business Forms, Inc., Niagara Falls, N.Y.
Filed Jan. 23, 1969, Ser. No. 793,342
Int. Cl. B41l 5/16
U.S. Cl. 282—3B **8 Claims**

A pocket register for containing a supply of manifolding material comprising a container for said material, a writing surface mounted within the container over which a strip of the material may be extended after being withdrawn from the interior of the container, means on the writing surface for engaging sheets of transfer material to be interposed between superposed portions of several sheets of manifolding material and adapted to limit extension of the withdrawn sheets, and a



substantially open, easily locked cover means for positioning the strips of withdrawn record material onto the writing surface thereby enabling writing to take place.

3,580,615
SOFTENER CONTROL ASSEMBLY
David G. Prosser, Milwaukee, Wis., assignor to Autotrol Corporation, Milwaukee, Wis.
Filed June 24, 1968, Ser. No. 739,539
Int. Cl. F16l 37/14, 39/00
U.S. Cl. 285—81 **5 Claims**

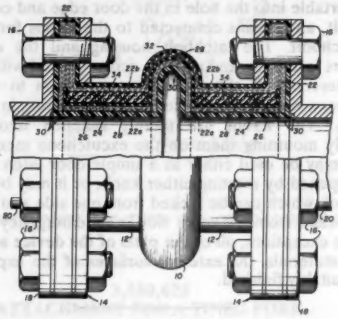


A water-softener control assembly for automatically controlling regeneration and adapted for connection to a water-softening tank. The assembly has a base unit connected to the tank and containing all the external pipe connections, and a separately removable control unit containing substantially all of the working control elements but none of the external pipe connections. The control unit is releasably connected to the base unit by a U-shaped locking member whose projecting arms are received in the aligned apertures of cooperating ribs projecting from adjacent opposed surfaces of the units.

3,580,616
REINFORCED EXPANSION
Joseph Merkwacz, Penfield, N.Y., assignor to Garlock Inc., Palmyra, N.Y.
Continuation-in-part of application Ser. No. 666,870, Sept. 11, 1967, now abandoned. This application Aug. 18, 1969, Ser. No. 850,983
Int. Cl. F16l 27/10, 51/00
U.S. Cl. 285—229 **6 Claims**

Cylindrical portions of an expansion joint, at opposite sides of an expansible arch of the joint, have reinforcing means integral therewith in the form of a spaced-turn coil of glass-fiber cord embedded within a cylindrical mass of flexible

rubber. The rubber prevents interengagement of the turns of the coil and enables the joint's cylindrical portions to expand

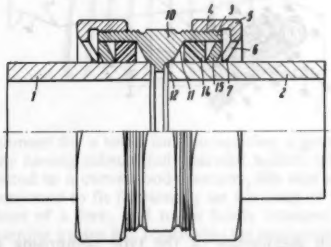


and contract axially. The coiled cord strongly opposes radial expansion of said cylindrical portions from internal pressure.

3,580,617
PIPE UNION

Hermann Ehrenberg, Langen-Hessen, Germany, assignor to Fouquet-Werk Frauz & Planck, Rottenburg Neckar, Germany

Filed May 28, 1969, Ser. No. 828,795
Claims priority, application Germany, May 28, 1968, P 17 50 710.7
Int. Cl. F16l *19/08*
U.S. Cl. 285—340 **13 Claims**



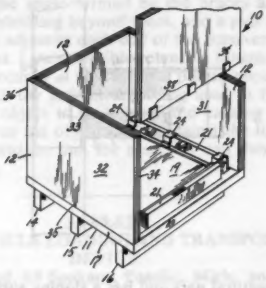
Two pipes have axially aligned proximal end portions. A sleeve surrounds the end portions with clearance and has an annular radially inwardly extending projection which forms an inner annular ridge located between the facing axial end-faces of the pipe end portions. At each axial side of the annular projection a scaling ring is received in the clearance, followed by a pressure-transmitting ring. Nuts are screwed exteriorly onto each axial sleeve end, surround the same and the associated pipe end portion, and deforming the sealing rings through the intermediary of the associated pressure-transmitting rings into sealing engagement with the sleeve and the associated pipe end portion.

3,580,618
COMBINATION CLEAT AND CLIP MEANS FOR ASSEMBLING COLLAPSIBLE CONTAINERS

Julius B. Kupersmit, 299 W. 12th St., New York, N.Y.

Filed Sept. 15, 1969, Ser. No. 857,838
Int. Cl. F16b *7/00*
U.S. Cl. 287—20.924 **1 Claim**

A combination cleat and clip means for interconnecting the sides of a collapsible container with the bottom or floor thereof, the cleat being secured to said bottom or floor and having a recess, the principal axis of which is parallel to the plane of said bottom or floor; the clip being secured to a surface of a wall, and having resiliently expandable means extending laterally from the plane of said wall and engaging said recess in such manner that said cleat is gripped on opposite sides thereof between said resiliently expandable

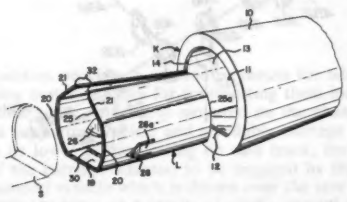


means and a surface of said wall, to maintain said wall substantially at a right angle with respect to said bottom or floor. The invention has application to other structures, as for example the assembly of furniture and the like.

3,580,619
SPRING CLIP

Frederick Jean Maltais, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 6, 1970, Ser. No. 17,095
Int. Cl. F16d *1/06*
U.S. Cl. 287—53 **6 Claims**



A clip has been provided for securing a knob to a D-shaped shaft, by inserting it in an aperture in the knob. The clip is a longitudinally split spring which seizes in the knob and grasps the shaft by means of springlike longitudinally tapered panels cooperating with centering protrusions in said spring thereby frictionally engaging and centering the shaft in the knob. A plurality of projecting, pointed barbs may be provided to depend from the spring and to engage in a locking or seizing relationship the clip spring into the inner wall of the receiving aperture. The centering protrusions also provide a positive engagement as well as proper centering of the D-shaft in the knob aperture, thereby holding the knob on the D-shaft substantially without wobbling and still allowing the D-shaft to be withdrawn and reinserted numerous times without substantial loss of performance.

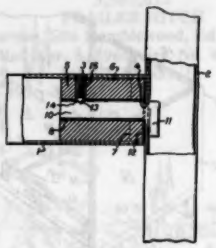
3,580,620
FASTENING DEVICES

Adrian Gottfried Offenbroich, 49 Sodra Forstadsgatan 211, Malmo, Sweden

Filed Mar. 10, 1970, Ser. No. 18,063
Claims priority, application Sweden, Mar. 11, 1969, 3,292/69
Int. Cl. F16b *7/00*
U.S. Cl. 287—54 **1 Claim**

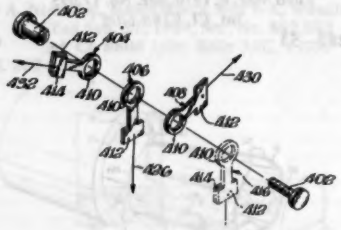
Fastening device for disengageably joining a first and a second preferably tubular structural part, comprising an expander body, being at least partly slotted and nested in the

open end of the first structural part and having a longitudinal chamber for a joining member, which on its end has a hook for engagement behind an edge portion of an opening in the



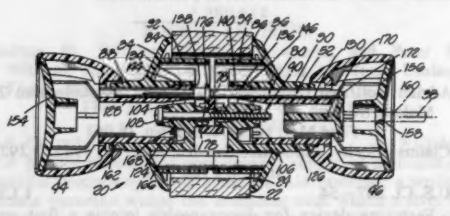
second structural part and has a sloping surface for cooperation with the conical end of a screw, threadedly engaged in the expander body.

3,580,621
EYELET AND LUG ASSEMBLY
Robert F. Chambers, 504 Beverly Road, Newark, Del.
Division of Ser. No. 735,259, June 7, 1968, Pat. No. 3,520,981, July 21, 1970. This application Mar. 23, 1970, Ser. No. 003,619
Int. Cl. F16c *11/00*
U.S. Cl. 287—101 **2 Claims**



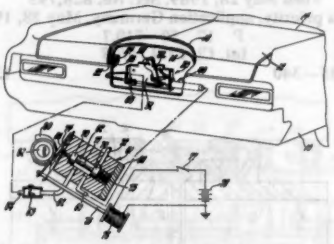
Assembly comprises eyelet in form of shaft with series of lugs mounted on shaft. Each lug includes looped end portion of same thickness that loosely surrounds shaft and coplanar end portion of same thickness as looped portion. Looped portions of lugs contact one another in line on shaft. At least one of end lugs in line includes additional portion connected and equal in thickness to its coplanar end portion with additional portion offset in direction of adjacent lug in line.

3,580,622
DOOR LATCH
Philip R. Morgan, Monrovia, Calif., assignor to Acme Appliance Manufacturing Company, Monrovia, Calif.
Filed May 12, 1969, Ser. No. 823,839
Int. Cl. E05b *3/06, 9/08, 15/16*
U.S. Cl. 292—169 **8 Claims**



A door latch or lock to be mounted on a door having an opening therethrough adjacent one edge and having a hole in such edge into the opening, comprising two escutcheon members respectively insertable into and adapted to overlie the ends of the opening through the door, two knobs respectively mounted on the escutcheon members, a latchbolt housing insertable into the hole in the door edge and containing a latchbolt, and means connected to the knobs for retracting the latchbolt. The latchbolt housing and the escutcheon members interlock, and a single screw coaxial with the knob axis interconnects the escutcheon members to secure the escutcheon members and the latchbolt housing in assembled relation. The knobs are merely snapped into place in rotatably mounting them on the excutcheon members. The device may be used either as a simple door latch capable of being opened by rotating either knob, or it may be used as a door lock which can be locked from one side and which can be unlocked from the other side in an emergency. With two or three exceptions, all of the parts of the device are made of plastic materials, the external surfaces of the exposed parts being suitably finished.

3,580,623
LATCH MECHANISM
Theodore F. Peters, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed July 31, 1969, Ser. No. 846,538
Int. Cl. E05b *51/00;* E05c *3/06*
U.S. Cl. 292—201 **5 Claims**

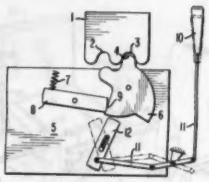


A latch mechanism of the type comprising a latchbolt pivotally mounted on a vehicle body for releasably engaging a striker secured to the vehicle deck lid, the latchbolt being moved from an unlatched position toward a latched position upon engagement with the striker. Continued movement of the latchbolt to the latched position is power assisted by a differential-fluid-pressure-operated motor connected to the latchbolt. The operation of the differential-fluid-pressure-operated motor is controlled by fluid valves, one of which is actuated upon initial movement of the latchbolt toward the latched position to operate the motor for effecting continued movement of the latchbolt to the latched position at which position it is releasably engaged by a latch hook.

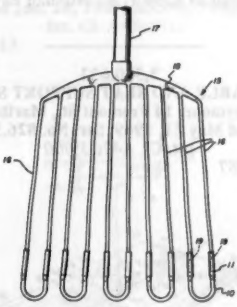
3,580,624
INSTALLATION FOR CONTROLLING THE CLOSING CONDITION OF PARTS ADAPTED TO BE MUTUALLY LOCKED, ESPECIALLY IN MOTOR VEHICLES
Gunter Gmeiner, and Christian Grabner, Sindelfingen, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Aug. 23, 1968, Ser. No. 754,914
Claims priority, application Germany, Aug. 26, 1967, P 16 53 957.4
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **16 Claims**

An installation for controlling the closing condition of parts adapted to be mutually locked or closed, especially in motor vehicles in which the engaging condition of a closure

device is sensed by appropriate means and a feedback signal, which may be either mechanical, optical or acoustic in nature, indicates when the parts are completely closed or locked.

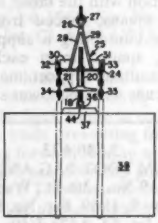


3,580,625
ATTACHMENT FOR A TINED FORK
Edwin F. Booth, Rte. 1, Alamosa, Colo.
Filed July 22, 1969, Ser. No. 843,410
Int. Cl. A01d *9/00*
U.S. Cl. 294—59 **5 Claims**



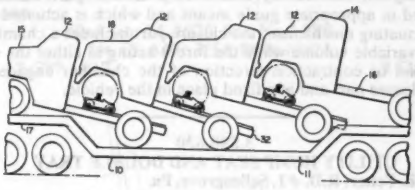
An attachment for a tined fork comprising a generally U-shaped body having substantially parallel hollow side members connected to a curved body portion, the side members being dimensioned to fit frictionally on the ends of a pair of adjacent tines of a fork, and to be firmly retained thereon without fastening means but removable for replacement. The attachment prevents injury to potatoes and other produce being handled by the fork.

3,580,626
CLAMPING FIXTURE FOR USE IN A HOISTING AND LIFTING DEVICE
Luell Hilburn, 7240 Manila Ave., El Cerrito, Calif.
Filed Feb. 14, 1969, Ser. No. 799,173
Int. Cl. B66c *1/12*
U.S. Cl. 294—67 **9 Claims**



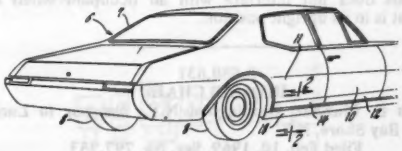
A hoisting device. A rigid base and a rigid symmetrical frame are joined by jack means comprising two members joined together for motion toward and away from each other, one member being secured to the base and one to the frame, for moving the frame and base relatively to each other. The frame has at its upper end, a ring for engagement by a pickup device, and it has a pair of diagonal braces extending from the ring, and a transverse portion lying perpendicular to the angle bisecting the angle formed by the braces and joining the braces and extending beyond them, and a pair of vertical anchor slots, one adjacent each end of the transverse portion beyond the braces. Linear flexible retention means, such as a chain or cable, secured in the slots are passed around an object to be hoisted, the jack means being used to tighten the base against the object to be hoisted and causing it to bear against it and force the object tightly against the linear flexible retention means, so that the assembly can then be lifted by lifting the ring.

3,580,627
MOTOR VEHICLE LOADING AND TRANSPORTING DEVICE
Ray L. Underwood, 65 Spokane, Pontiac, Mich., and Thomas A. Campbell, 4885 Clarkston Road, Clarkston, Mich.
Filed Sept. 20, 1968, Ser. No. 761,052
Int. Cl. B60p *3/06*
U.S. Cl. 296—1 **2 Claims**



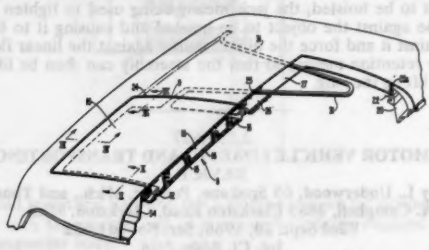
This invention provides a method or means for telescopically loading motor vehicles for transporting them including a longitudinal track detachably mounted on the chassis box frame of a supporting vehicle and a rollable carriage having rollers on its lower portion riding on said track, the upper portion of the carriage adapted to be engaged by the front axle of a second vehicle which is driven over the rear end of the supporting vehicle, the front end of the second vehicle being carried rollably forward solely by the carriage as the second vehicle is driven forwardly partly on its rear wheels and partly on the chassis of the supporting vehicle.

3,580,628
ROCKER-MOLDING INSTALLATION
Charles W. Rantala, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed July 16, 1969, Ser. No. 842,129
Int. Cl. B62d *23/22*
U.S. Cl. 296—1 **4 Claims**



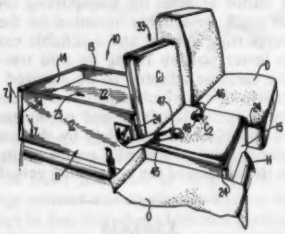
An arrangement for securing a rocker molding to an automobile rocker panel notwithstanding the presence of a body panel lower molding immediately above the rocker panel. The rocker molding hooks over clips which may move vertically on the rocker panel and the ultimate location vertically of the rocker panel is fixed by screws entering the bottom of the rocker panel through a flange on the molding.

3,580,629
INSTALLATION FOR CLOSING OR OPENING APERTURES IN VEHICLES
Gerhard Heim, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Dec. 5, 1968, Ser. No. 781,502
Int. Cl. B60j 7/04
U.S. Cl. 296—137 35 Claims



An installation for the selective closing and opening of openings in vehicles by means of a closure part which is guided in appropriate guide means and which is actuated by an actuating mechanism; the closure part includes a chamber with variable volume while the forces acting in either the expansion or contraction direction of the chamber engage at the closure part and at a fixed place in the vehicle.

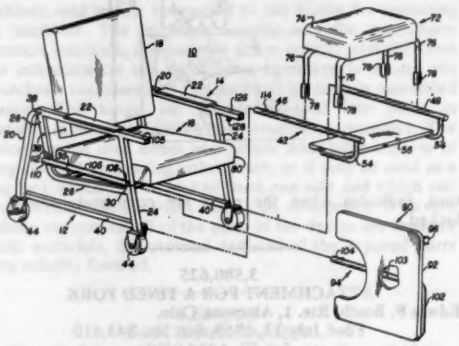
3,580,630
UTILITY HUMP SEAT AND DOUBLE TRAY
Paul E. Fetter, R.D. #1, Selinsgrove, Pa.
Filed Nov. 6, 1969, Ser. No. 874,461
Int. Cl. A47b 85/04
U.S. Cl. 297—125 10 Claims



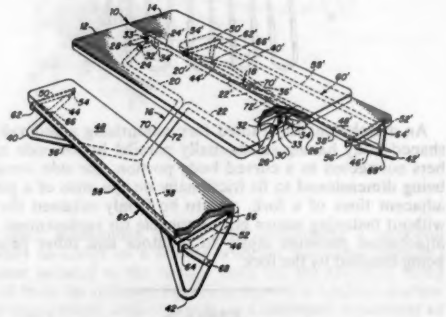
This disclosure relates to a convertible seat tray constructed to overlie conventional humped engine housings of utility-type trucks, the seat tray including a back tray which is at all times accessible and a front tray which is accessible when a backrest is in its collapsed position. The front tray is formed by a ledge secured to the back side of the backrest and thus does not interfere with an occupant when the backrest is in its upright position.

3,580,631
INVALID CHAIR
Charles E. Murcott, Huntington, N.Y., assignor to Lumex Inc., Bay Shore, N.Y.
Filed Feb. 10, 1969, Ser. No. 797,753
Int. Cl. A47c 39/00
U.S. Cl. 297—155 16 Claims

An invalid chair is disclosed which includes first and second frames between which is removably supported a seat assembly which is longitudinally slidable with respect to the side frames. The chair further includes a table tray which can be moved between a noninterfering or storage position with respect to bodily access to the seat, and a tablelike position by merely aligning a single arm fixed to the table with a passageway within one of the chair arm rests. Additionally, a foot rest is slidably disposed beneath the seat assembly and movable between a storage position and a forward foot rest, where it is adapted to support an ottoman having bifurcated legs.



3,580,633
FOLDING TABLE AND SEAT SUPPORT STRUCTURE
Paul Maurice Seymour, 14 Fremont St., Marlboro, Mass.
Filed May 21, 1969, Ser. No. 826,594
Int. Cl. A47c 39/00
U.S. Cl. 297—157 8 Claims

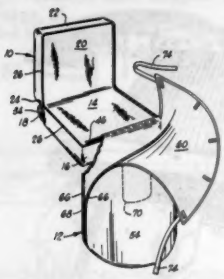


A folding combination table and seat including a support structure therefor, including upper support means having two connector portions, spaced from each other in a first direction, for connection with the table, lower support means having two bearing means, spaced from each other in a second direction, for contacting a supporting surface, two seat support means, spaced from each other in a third direction, and intermediate support means interconnecting the upper support means with the lower support means.

3,580,633
STADIUM FOOT BAG AND SEAT
Florence Du Priest, 519 No. 13th St., Waco, Tex.
Filed May 9, 1969, Ser. No. 823,315
Int. Cl. A47c 7/10
U.S. Cl. 297—184 5 Claims

A foot bag for stadium use which completely encloses the feet and lower legs of the user and extends up over the upper legs and lap of the user when the user is seated, with a belt being attached to the upper end of the foot bag for attachment around the waist of the user. The foot bag is used

in conjunction with a stadium seat having a seat bottom and a seat back hinged together with bracing to limit the rearward movement of the seat back and form a handle for the seat. Dual seats and foot bags are also disclosed.

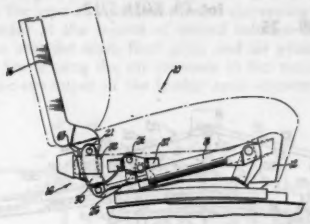


3,580,634
TILTABLE DRUMMER'S SEAT
John T. Bock, 9 Hillview Place, Elmsford, N.Y.
Filed Jan. 28, 1969, Ser. No. 794,498
Int. Cl. A47c *9/12*
U.S. Cl. 297—313 **6 Claims**

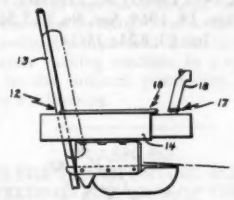
A stool having a horizontal plate constrained to a horizontal position and a similarly shaped seat plate hinged to the horizontal plate at its forward edge, and a cushion mounted on the seat plate, with adjusting screwbolts extending threadably through the rear portion of the horizontal plate to engage and tilt the seat plate to any desired angle within the range provided.

3,580,635
RECLINING FORWARD FOLDING SEAT
Raymond C. Posh, Livonia, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.
Filed Aug. 14, 1968, Ser. No. 752,529
Int. Cl. A47c *1/032*
U.S. Cl. 297—355 **36 Claims**

A seat assembly including a cushion frame and a back frame with control means operatively interconnecting the frames for allowing the back frame to recline from an upright seat-forming position while preventing forward folding movement and for allowing forward folding movement of the back frame from the upright seat-forming position while preventing reclining movement. Two embodiments are disclosed and in each embodiment the control means includes a C-shaped link pivotally connected to the cushion frame on the folding axis and pivotally connected to the back frame at a point on the reclining axis when in the upright seat-forming position. A second link is pivotally connected to the cushion frame on the reclining axis and depends therefrom and has various flanges to coact with a dependent arcuate section of the back frame and the C-shaped link for allowing folding movement while preventing reclining movement and vice versa. A positioning mechanism interconnects the cushion frame and the lower end of the second link for controlling the reclining position of the back frame. In one embodiment the reclining and folding axes intersect and in another embodiment the axes are parallel.

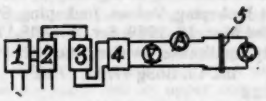


3,580,636
DUAL SIDE ARM CONTROLLER
Joseph B. Setto, Los Angeles, Calif., assignor to the United States of America as represented by the Secretary of the Air Force
Filed Jan. 14, 1970, Ser. No. 2,708
Int. Cl. A47c *7/54;* **B64c** *13/04*
U.S. Cl. 297—417 **9 Claims**



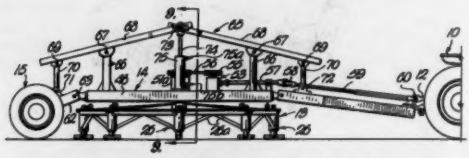
A dual side arm controller for use within the armrests of a seat. The seat is made up of a back portion and a pair of retractable armrests. The side arm controller is made up of a handgrip, cables and torque tube. The relationship between these elements allow for the retractable movement of either of the armrests without substantially affecting the operation of the side arm controllers.

3,580,637
METHOD OF DESTROYING FERROCONCRETE, ROCK OR THE LIKE
Yoshishige Itoh; Masatada Kawamura, both of Tokyo, and Yoshio Kasai, Funabashi, all of Japan, assignors to Fuji Motors Corporation, Higashiyamato, Tokyo, Japan
Filed Oct. 9, 1968, Ser. No. 766,262
Claims priority, application Japan, Oct. 21, 1967, 42-67503
Int. Cl. H05b *1/00;* **E21c** *37/18*
U.S. Cl. 299—14 **5 Claims**



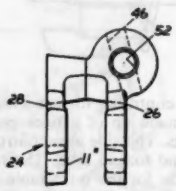
The method of destroying a ferroconcrete body formed of a concrete mass having metal reinforcement bars embedded therein, said method uses the reinforcement bars as electrical conductors and heats them by the application of electric current thereto to cause sufficient thermal expansion of the reinforcement bars to cause cracking of the concrete and to simultaneously lower the adhesion between the reinforcement bars and the concrete.

3,580,638
PACKED SNOW AND ICE REMOVER FOR HIGHWAYS AND THE LIKE
Robert K. Pullen, Fullerton, Nebr.
Filed June 13, 1969, Ser. No. 832,961
Int. Cl. E01h *5/12*
U.S. Cl. 299—25 **4 Claims**



A powered rotor carrying a plurality of cutting blades is supported from a mobile frame. The cutting blades have cutting or milling edges for engaging and advancing laterally into a bed of ice or packed snow. The support connection between the rotor and frame is such as to provide control over the spacing and pressure of the blades with respect to the covered surface and the blades are resiliently floatable to accommodate uneveness in the surface.

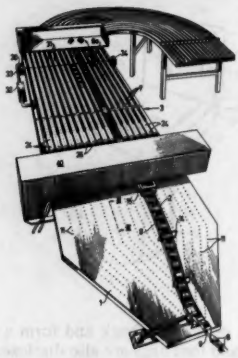
3,580,639
CUTTER CHAIN
Ralph W. Mitchell, 1421 Liberty St., Franklin, Pa.
Filed Apr. 18, 1969, Ser. No. 817,346
Int. Cl. E21c *25/34*
U.S. Cl. 299—84 **10 Claims**



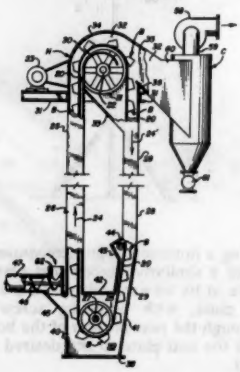
An endless flexible cutter chain and more particularly a chain consisting of a plurality of rigid links with all of the rigid links consisting of two body portions and through the use of only two basic body portions, a chain is constructed which comprises single-bit cutter links, double-bit cutter links and/or cutter links having no means for receiving cutter bits therein.

3,580,640
SYSTEM FOR DISTRIBUTING AND ADVANCING OBJECTS
Birger Sture Erik Eriksson, Tranghalla, Sweden, assignor to Aktiebolaget Jonkoping, Vulcan, Jonkoping, Sweden
Filed Mar. 18, 1969, Ser. No. 808,179
Claims priority, application Sweden, Mar. 22, 1968, 3829/68
Int. Cl. B65g *47/26, 51/02*
U.S. Cl. 302—2R **9 Claims**

A system for distributing and advancing objects comprises a continuously pendulating, flexible distributing arm or chute with an inlet end into which said objects are fed sequentially at high velocity, and an outlet end which reciprocates transverse to a plurality of individual tracks which are separated from each other by separating means. The outlet end of the distributing arm is located on a higher level than that end of the separating means which is located nearest to the arm. The system further comprises means for compulsory advancing said objects along said arm and said tracks so that the objects passing the arm in a single row become uniformly distributed amongst said tracks.



3,580,641
METHOD OF AND APPARATUS FOR INCREASING THE CAPACITY OF BUCKET ELEVATORS
Charles M. Schloss, Jr., 1626 Wazee St., Cherry Hills Village, Colo.
Filed Apr. 28, 1969, Ser. No. 827,458
Int. Cl. B65g *53/04*
U.S. Cl. 302—12 **24 Claims**



The method comprises producing a flow of air at and adjacent and in the same direction of movement of an arcuate path of the buckets toward an outlet, by means of which airflow the divided material carried by the buckets is assisted in the proper path out of the casing. Particles are separated from the air, after passage through the outlet, and this air may be circulated to an upper housing adjacent the arcuate path; or to a lower housing in which the buckets are loaded. The apparatus for carrying out the above method may include a cyclone separator or the like, a blower connected thereto or connected to the lower housing, or connected for discharge of air into the upper housing, such as tangentially to a concave top thereof. The apparatus may also include a discharge chamber having two outlets, one leading to the separator and the other to a discharge conveyor or the like. The blower may also be driven by the shaft of an upper pulley or incorporated in the upper pulley.

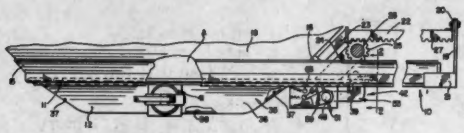
The method also includes producing a flow of air at and adjacent and in the same direction of movement of material entering a bucket elevator casing inlet, to enhance the transport of sluggishly flowing materials into said casing.

3,580,642

COMBINATION GRAVITY AND PNEUMATIC GATE ARRANGEMENT FOR HOPPERS

Ernest J. Nagy, Munster, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Mar. 10, 1969, Ser. No. 805,500
Int. Cl. B65g 53/40
U.S. Cl. 302—52 3 Claims



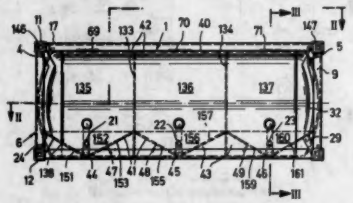
A hopper discharge arrangement includes a combination of a gravity gate and a pneumatic gate which may be positioned in closed relation underneath the discharge end of a hopper and which may be moved to one side of the discharge end for effecting gravity discharge of materials contained within the hopper. A manually operated rack and pinion arrangement is provided on the gravity gate which cooperates to effect sliding movement thereof. The pneumatic gate includes a dish-shaped pan having a pneumatic outlet connected thereto and the said gravity gate and pneumatic gate may be interconnected by means of an interlocking device to provide for conjoint movement. The interlock device is effective to lock the gravity and pneumatic gates in a closed position or together for simultaneous movement. The interlock device also may be readily disengaged to permit sole movement of the gravity gate to an open position whereby the pneumatic gate remains in a pneumatic discharge position underneath the discharge end of the hopper.

3,580,643

TRANSPORT CONTAINER FOR FLOWABLE MATERIAL

Artur Spitzer, Mosbach Baden, Germany, assignor to Ludwig Spitzer Sen. KG (Kommanditgesellschaft), Mosbach/Baden, Germany

Filed Aug. 8, 1968, Ser. No. 751,200
Claims priority, application Germany, Aug. 12, 1967, P 15 86 914.4
Int. Cl. B65g 53/40
U.S. Cl. 302—53 9 Claims



A pressurized shipping container including a cylindrical tank surrounded by a rectangular frame. The tank is provided with a plurality of internal, inverted pyramid or funnel shaped, false bottoms for emptying the flowable contents of the container. The plurality of such inclined false bottoms greatly reduces the dead space in the tank. Discharge flow may be assisted by making the false bottoms of porous material and forcing air up through them to provide an air cushion on their inner surfaces.

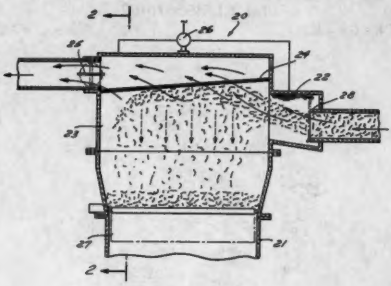
3,580,644

PNEUMATIC FEED SYSTEM FOR UNIFORM SUPPLY OF TOBACCO TO CIGARETTE MAKING MACHINES

Francis J. Jr. Ballard, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Mar. 4, 1969, Ser. No. 804,071
Int. Cl. B65g 53/40
U.S. Cl. 302—59 2 Claims

A tobacco discharger associated with a cigarette making machine and an automatic tobacco conveying system for pneumatically conveying tobacco from a storage area to the cigarette machine wherein the conveying system includes a main feed pipe coupled with the source of the stored tobacco and the discharger, air differential pressure means for forcing air through the pipe at a predetermined conveying velocity, a tobacco feeder at the source of stored tobacco for feeding the tobacco into the main feed pipe, and air pressure sensitive means for sensing the air pressure in the main pipe and actuating the operation of the feeder upon attainment of the



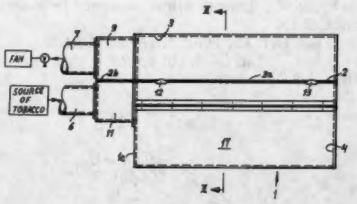
predetermined conveying velocity of the air to the discharger. The discharger includes a housing having an air inlet end coupled with the main feed pipe and an air discharge end. It also contains tobacco separating means within the housing for separating tobacco carried by air entering the inlet end so that the separated tobacco is uniformly distributed within the housing. Means are also included for causing the uniformly separated tobacco to be discharged into the cigarette making machine in a constantly uniform manner due to the uniform positioning of the separated tobacco within the housing.

3,580,645

APPARATUS FOR TRANSPORTING AND COLLECTING SHREDDED TOBACCO OR THE LIKE

Klaus Hagenah, Hamburg, Germany, assignor to Hauni-Werke Korber & Co. K.G., Hamburg, Germany

Filed Mar. 7, 1969, Ser. No. 805,225
Claims priority, application Germany, Mar. 15, 1968, P 16 57 255.7
Int. Cl. B65g 53/40
U.S. Cl. 302—59 10 Claims



Apparatus for supplying shredded tobacco to the distributor of a rod cigarette machine comprises a magazine having a front wall connected with the discharge end of a tobacco-admitting first pneumatic conduit and with the intake end of an air-evacuating second pneumatic conduit. A sieve divides the interior of the magazine into an upper compartment which communicates with the intake end of the second conduit and a lower compartment which communicates with the discharge end of the first conduit. The sieve has a first section which offers a relatively low resistance to the passage of air from the lower compartment into the upper compartment when the second conduit evacuates air from the magazine while the first conduit admits tobacco-laden air, and a second section which offers greater resistance to the passage of air and is bypassed by tobacco shreds which leave the discharge

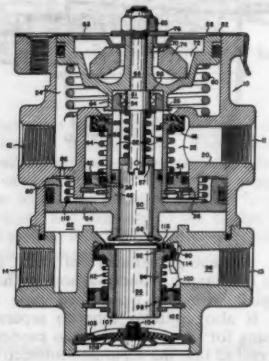
end of the first conduit. The second section of the sieve permits flow of air into the second conduit on partial or complete clogging of the first section.

3,580,646

DUAL CIRCUIT BRAKE VALVE

George E. Ternent, Elyria, Ohio, assignor to Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio

Filed Sept. 17, 1969, Ser. No. 858,702
Int. Cl. B60t *15/02*
U.S. Cl. 303—52 7 Claims



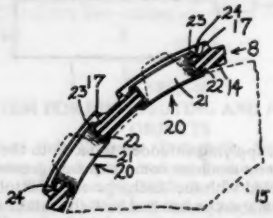
A dual circuit brake valve including first and second self-lapping valve elements for respectively controlling primary and secondary fluid pressure braking circuits, the first valve element being manually controlled and the second valve element being controlled by a relay piston subject to the pressure in the primary circuit wherein the relay piston is subjected to the action of a pair of springs acting in opposite directions so that during operation of the first valve element the crack pressure required to open the second valve element is reduced to a minimum and the application of fluid pressure to the primary and secondary circuits is substantially simultaneous.

3,580,647

SNOWMOBILE TRACK

William R. Richards, Roseau, Minn., assignor to Textron Inc., Providence, R.I.

Filed Oct. 15, 1968, Ser. No. 767,641
Int. Cl. B62d *55/24*
U.S. Cl. 305—35 9 Claims



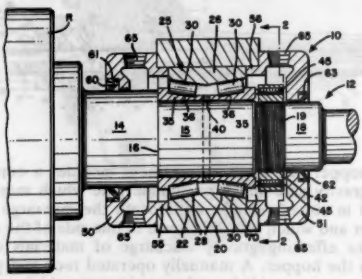
An endless flexible drive belt having longitudinally spaced openings for meshing engagement with the teeth of a drive sprocket wheel, and belt reinforcing and wear elements mounted in the openings. The wear elements have portions that are curved in a direction longitudinally of the belt, the curved portions being formed to closely follow the curvature of the sprocket wheel.

3,580,648

ROLL AND ANTIFRICTION BEARING ASSEMBLY

Stanley C. Zink, Northport, and Joseph J. Slane, Fulton, both of, N.Y., assignors to The Black Clawson Company, Hamilton, Ohio

Filed Apr. 7, 1969, Ser. No. 814,114
Int. Cl. F16c *35/06*
U.S. Cl. 308—207 5 Claims



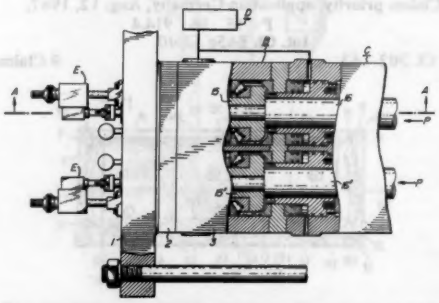
Each journal of a roll is supported by an antifriction roller bearing including an outer race and two inner races spaced axially by a ring of predetermined thickness. The inner races and the spacer ring are pressed axially against a shoulder on the journal by a plurality of jackscrews extending axially through a locknut for minimizing radial runout of the roll.

3,580,649

HIGH THRUST BEARING APPARATUS

Shigeru Araki, Hirakata-Shi; Shozo Takahashi, and Ichiro Muto, Osaka, Japan, assignors to Matsushito Electric Industrial Co. Ltd., Osaka, Japan

Filed Aug. 12, 1969, Ser. No. 849,449
Claims priority, application Japan, Aug. 15, 1968, Dec. 7, 1968, 43/58793; 43/89800; 43/89801
Int. Cl. F16c *19/10*
U.S. Cl. 308—233 5 Claims



A plurality of thrust bearings to be subjected to a thrust load are arranged coaxially around a thrust shaft. A volumetrically variable air space is formed on one side of each thrust bearing opposite to the load, by means of rigid parts, without using an elastic element such as a bellows, and fluid pressure is supplied to the respective air spaces from a common fluid pressure source so as to create an equal cushioning effect in the respective thrust bearings, whereby the thrust load is taken equally by the respective thrust bearings.

3,580,650

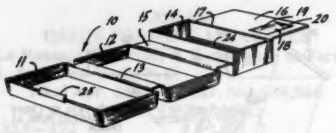
CABINET STRUCTURE

William J. Morris, Woodbury, N.J., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed Dec. 23, 1968, Ser. No. 786,199
Int. Cl. A47b *81/06*
U.S. Cl. 312—7 8 Claims

A molded, unitary, multisection plastic cabinet structure for a small portable device such as a radio receiver. The sec-

tions are joined by integral hinges comprising reduced cross-sectional areas of the plastic material from which the cabinet structure is molded. The sections are so foldable about their

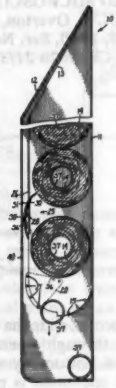


respective hinges as to provide a case for the device, selectively foldable to a stored position within an outer case, and movable to a propped up position for use of the device, or to an extended position for servicing.

3,580,651
TOILET TISSUE HOLDING AND DISPENSING APPARATUS

Morris S. Gauper, 109 Lakeview Blvd., Coleraine, Minn.

Filed May 21, 1969, Ser. No. 826,517
Int. Cl. B65h *19/00*
U.S. Cl. 312—39 **2 Claims**

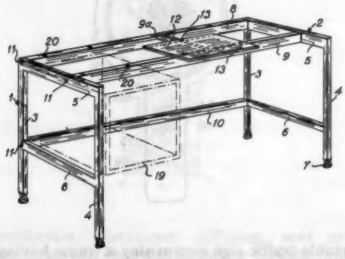


A housing constructed to receive a plurality of rolls of toilet tissue in generally overlying relationship with cradle means for receiving a roll and maintaining it in a dispensing position, a portion thereof operable to reject the empty roll, and stop means operable to allow one roll at a time to be positioned in the cradle means, said cradle means and stop means operating simultaneously to renew the roll in the dispensing position.

3,580,652
TYPEWRITER TABLE

Erik Christian Valeur Nielsen, Birkerod, Denmark, assignor to Max Bodenhoff A/S, Copenhagen, Denmark

Filed Dec. 19, 1968, Ser. No. 785,076
Int. Cl. A47b *21/00*
U.S. Cl. 312—208 **7 Claims**

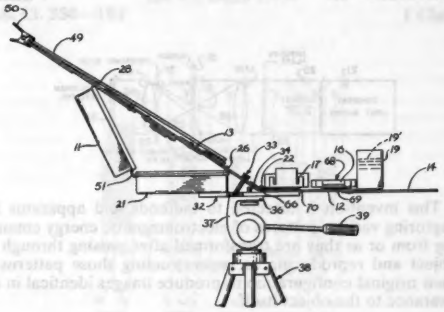


A typewriter table has a steel tube frame which, in order to provide rigidity and to permit ready dismantling, consists of two gable sections and three longitudinal girders rigidly connecting same, two of the girders being upper girders supporting the table top, whereas the third one connects the rear legs at a lower level.

3,580,653
ARTIST'S PAINTING KIT AND TRIPOD ADAPTER THEREFOR

Carroll E. Thomas, San Francisco, Calif.

Filed Nov. 18, 1968, Ser. No. 776,726
Int. Cl. A47b *97/04, 27/00*
U.S. Cl. 312—231 **8 Claims**

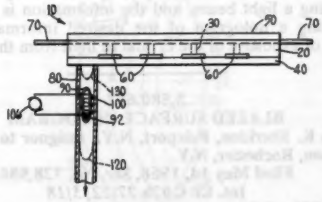


The invention comprises, in combination with a camera tripod and a portable kit as described and claimed in my copending application, U.S. Ser. No. 609,536, filed Jan. 16, 1967, and entitled ARTIST'S PAINTING KIT now Pat. No. 3,414,343, for removably carrying artist's equipment and provided with a hinged lid for supporting an easel in predetermined inclined position with respect to a base plate, an adapter disposed in underlying relation to the bottom of said kit and bottom of said baseplate for removably mounting said kit and said artist's equipment upon the top plate of said camera tripod, and means extending through said easel and bearing upon said adapter for removably holding said kit and said artist's equipment including said easel against displacement.

3,580,654
METHOD OF MAKING DISPLAY DEVICES

George A. Kupsky, Milford, N.J., assignor to Burroughs Corporation, Detroit, Mich.

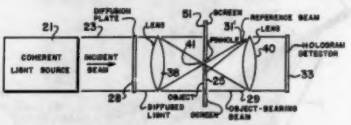
Filed Oct. 2, 1968, Ser. No. 764,983
Int. Cl. H01j *9/38*
U.S. Cl. 316—20 **6 Claims**



A method of making a gas discharge display device comprising assembling the component parts of the device and providing a tabulation through which the device can be filled with the desired gas. A capsule containing an antisputtering agent such as mercury is mounted within the tabulation, along with suitable means by which it may be heated. The device is suitably baked out and otherwise preliminarily processed; the desired gas is introduced; and the tubulation is sealed off with the capsule remaining therein. After any other

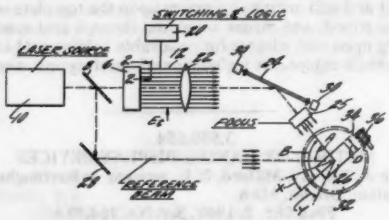
processing steps are carried out as required, the material is freed from the capsule, and, with the entire assembly heated to a suitable temperature to cause the anitsputtering agent to enter the working area of the device, the tubulation is sealed off at an area close to the device itself and with the capsule within the portion of the tubulation which is removed.

3,580,655
WAVEFRONT RECONSTRUCTION
Emmett N. Leith, Plymouth, and Juris Upatnieks, Ann Arbor, both of, Mich., assignors to The Battelle Development Corporation, Columbus, Ohio
Continuation-in-part of application Ser. No. 361,977, Apr. 23, 1964. This application Oct. 23, 1965, Ser. No. 503,993
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **7 Claims**



This invention is directed to methods and apparatus for capturing various patterns of electromagnetic energy emanating from or as they are transformed after passing through an object and reproducing or reconstructing those patterns in their original configuration to produce images identical in appearance to the object itself.

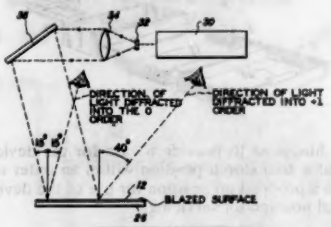
3,580,656
HOLOGRAM APPARATUS AND METHOD
Arthur N. Carson, Bristol, Conn., assignor to Carson Laboratories Inc., Bristol, Conn.
Filed Feb. 1, 1966, Ser. No. 523,995
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 **15 Claims**



An information processing system is presented for information storage and retrieval with a color center crystal wherein the information to be stored is generated by electrically modulating a light beam, and the information is then stored by forming a hologram of the desired information in the absence of exposure of the crystal to light from the subject.

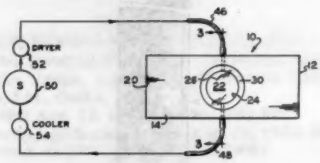
3,580,657
BLAZED SURFACE HOLOGRAM
Nicholas K. Sheridon, Fairport, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed May 14, 1968, Ser. No. 728,986
Int. Cl. G02b *27/22, 5/18*
U.S. Cl. 350—3.5 **27 Claims**

A blazed hologram is produced by exposing a photohardenable material to a stationary standing wave pattern preferably followed by preferential dissolution of the relatively exposed (or relatively unexposed depending on the type of photohardenable material) portions of the exposed photohardenable material in a developer liquid to create, in a preferred embodiment, a blazed, step or sawtoothlike surface profile relief pattern produced by preferential etching, the extent of the etching following sections of the intensity surfaces because the areas of lower exposure are eroded where they come to the surface of the photoresist material and hence are subject to the developer liquid. The optical information presented in exposure is carried in the form of a sur-



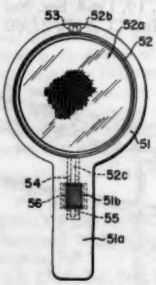
face relief on the developed photohardenable member. This surface relief may be used to reconstruct the optical image and may be used in other advantageous ways as described herein.

3,580,658
GAS COOLED MICROSCOPE SLIDE
Percy L. Swanson, 2244 N.W. Overton, Portland, Oreg.
Filed June 24, 1968, Ser. No. 739,415
Int. Cl. G02b *21/34*
U.S. Cl. 350—93 **8 Claims**



A gas cooled microscope slide having a built-in cooling chamber formed by a through opening in the slide body which is closed top and bottom by spaced laminated glass windows upon which a specimen is placed for observation. Internal passages in the slide body direct a gas coolant to and from the chamber and lead to edge openings in the slide body which are connected by flexible tubing to a coolant source and to cooling and drying elements.

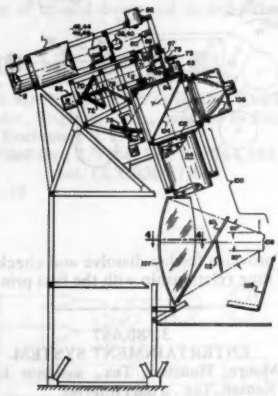
3,580,659
PORTABLE TRAFFIC SIGN
Yoshio Fukushima, Tokyo, Japan, assignor to Kabushiki-Kaisha Ricoh, Tokyo, Japan
Filed July 7, 1969, Ser. No. 839,560
Claims priority, application Japan, July 8, 1968, 43/58015
Int. Cl. G02b *5/12*
U.S. Cl. 350—98 **3 Claims**



A portable traffic sign comprising a frame having a handle and a reflex reflecting plate which may be fixedly or more

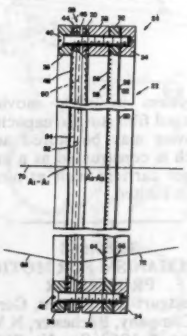
advantageously rotatably secured to the frame. For example, the portable traffic sign carried by a pedestrian crossing a street at night can give a positive warning to a driver.

3,580,660
IMAGE-FORMING APPARATUS
Joseph La Russa, Crestwood, N.Y., assignor to Farrand Optical Co., Inc., New York, N.Y.
Filed Apr. 25, 1966, Ser. No. 544,866
Int. Cl. G03b 21/08
U.S. Cl. 353—122 7 Claims



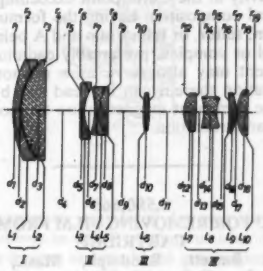
An object plane, the plane passing through the optical center of a lens and perpendicular to its axis, and the plane of an image-receiving means intersect in a common line to produce in the image plane a distorted image of an object in the object plane. A relay lens translates the image in the image plane to the focal plane of an infinity sight to present at infinity an image of the object in the object plane. A varifocal lens produces at the object plane as an object an image at variable magnification of an initial object such as a slide or film strip.

3,580,661
REAR PROJECTION VIEWING SCREEN FOR CLOSE VIEWING
Dexter P. Cooper, Jr., Pasadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Filed Apr. 10, 1969, Ser. No. 815,092
Int. Cl. G03b 21/60
U.S. Cl. 350—128 18 Claims



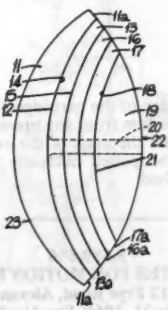
A nonreflective, directional diffusing, rear projection plastic viewing screen for close audience viewing. The screen comprises a composite Fresnel lens structure which includes suitably crossed convex cylindrical Fresnel lens patterns, and a superposed lenticular sheet structure for focusing incremental images—from horizontally overconverged light—at acentrically positioned light-transmitting areas on an opaque, plane viewing surface.

3,580,662
VARIABLE FOCAL LENGTH OBJECTIVE HAVING FOUR LENS GROUPS
Norbert Scholz, Deisenhofenerstr. 70, 8 Munich 90, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Mar. 10, 1969, Ser. No. 805,762
Claims priority, application Germany, Mar. 8, 1968, P 12 78 132.7-51
Int. Cl. G02b 15/14
U.S. Cl. 350—184 1 Claim



A variable focal length objective of high power has four groups of lenses, and altogether 10 lenses. The variation of the focal length is effected by displacement of the second group of lenses, and the picture is maintained in a constant position by a displacement of the first group of lenses. The aperture ratio is greater than 1 : 2, the quotient of the greatest and smallest focal length is substantially 2.5, and the maximum angle of field is at least ±20°.

3,580,663
COMPOSITE LENSES
Harris Vernon Hicks, Lichfield, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Sept. 10, 1968, Ser. No. 758,855
Claims priority, application Great Britain, Sept. 11, 1967, 41,302/67
Int. Cl. G02b 3/04, 3/08, 9/02
U.S. Cl. 350—189 6 Claims



A lens of large diameter and short focal length comprises a plurality of interengageable elements which are moulded in a transparent material, or in transparent materials having the same refractive index. The elements are interengaged to constitute the required lens.

3,580,664

TRANSMISSION ELEMENT FOR MAGNETO-OPTICAL APPLICATIONS, PARTICULARLY FOR THE MODULATION OF INFRARED RADIATION IN THE WAVELENGTH RANGE BETWEEN 1 AND 20 MICRONS

Piet Frans Bongers, and Giulio Zanmarchi, both of Emmasingel Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 7, 1969, Ser. No. 789,506
Claims priority, application Netherlands, Jan. 11, 1968, 6800387
Int. Cl. G02f 1/22
U.S. Cl. 350—320 4 Claims

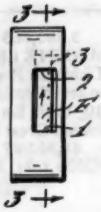
A novel magneto-optical transmission element consisting of a substrate transparent to radiation in the wavelength range between 1 and 20 microns having thereon a monocrystalline or polycrystalline layer of a material having a spinel structure, a magnetic permeability, in vacuo, $\mu_0 = B/H$ exceeding 1.2 at temperatures lower than the Curie point, i.e. the material is either ferromagnetic or ferrimagnetic, a resistivity at the Curie point exceeding 100 ohm-cm and a chemical composition having the formula A Cr_2Z_4, Z being selenium, sulfur, or telluorium and A being in general a divalent metal or complex, preferrably cadmium. The transmission element may also serve as a memory element in which information therein can be read out by determining the sign of the remanent magnetization thereof by means of polarized infrared radiation.

3,580,665

METHOD FOR REMOVING FILM FROM A FILM CARTRIDGE

Marvin Ben Bassett, Randolph, Mass., assignor to Technicolor, Inc., Hollywood, Calif.

Filed Apr. 18, 1968, Ser. No. 722,399
Int. Cl. G03b 23/02
U.S. Cl. 352—78 1 Claim



Peeling back an edge of the cartridge exposure window far enough to relieve the film from any pressure or friction from the pressure plate and the edge of the exposure window, so that the film may be pulled obliquely from the cartridge without being scratched.

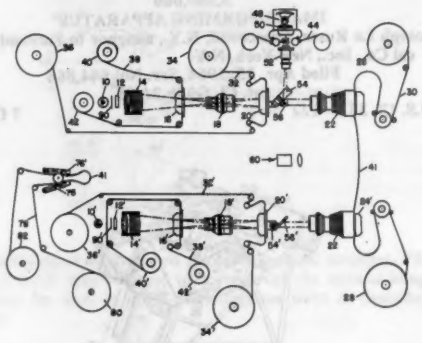
3,580,666

OPTICAL PRINTER FOR MOTION PICTURE FILM

Robert G. Vance, 8312 Frye Road, Alexandria, Va.

Filed July 31, 1969, Ser. No. 846,422
Int. Cl. G03b 21/32, 27/32
U.S. Cl. 352—90 22 Claims

An optical printer for superimposing titles or the like on motion picture film in which images from picture, title and title shadow matte rolls are projected onto raw film stock in a continuous operation. A cue roll provides for automatic advancement of this title and title-shadow matte and title rolls and also enables variations in light intensity and fade-in and fadeout to be effected. A second printing unit operated by



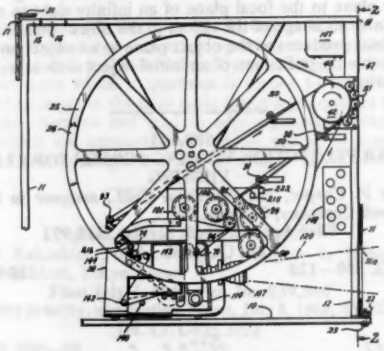
the cue roll provides for lap dissolve and checkerboarding in coordinated time relationship with the first printer.

3,580,667

ENTERTAINMENT SYSTEM

Robert D. Moore, Houston, Tex., assignor to Kenneth F. Faukner, Kemah, Tex., a part interest

Filed Oct. 9, 1968, Ser. No. 766,093
Int. Cl. G03b 21/02, 21/43, 29/00
U.S. Cl. 352—124 8 Claims



Entertainment system including movie projection apparatus having enlarged film storage capacity, whereby multiple full length movies may be stored and shown in any sequence, and which is constructed as a unit for installation and use in passenger carriers such as aircraft, or in other places where space is limited.

3,580,668

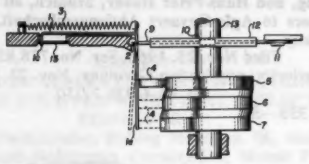
CONTROL MECHANISM FOR MOTION PICTURE PROJECTOR

Hermann Claar, Stuttgart-Hedelfingen, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 4, 1968, Ser. No. 765,112
Claims priority, application Germany, Oct. 7, 1967, K59048
Int. Cl. G03b 21/12, 1/22
U.S. Cl. 352—194 3 Claims

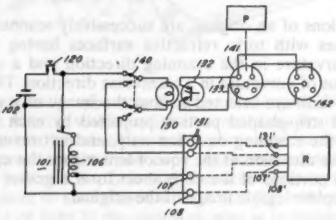
A driving arrangement for the film claw of a motion pic-

ture projector comprises a plurality of radial cams which rotate in synchronism on a common axis to selectively effect



various modes of up-and-down and in-and-out movement of the claw.

3,580,669
FILM-SOUND SYNCHRONIZING SYSTEM
Robert S. Beeler, Brighton, N.Y., assignor to Eastman Kodak Company,, Rochester, N.Y.
Filed Oct. 2, 1968, Ser. No. 764,558
Int. Cl. G03b *31/00*
U.S. Cl. 353—15 **9 Claims**

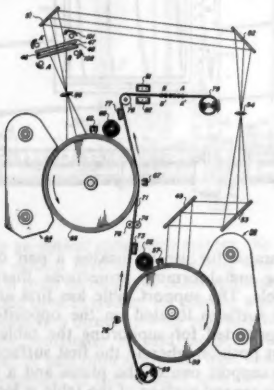


A unit for synchronizing a sound recording with photographic projection employing an audible device to record a signal. A light responsive to the recorded signal in playback actuates a photoswitch coupled with a projector advance mechanism to operate the projector.

ERRATUM

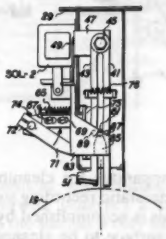
For Class 353—122 see:
Patent No. 3,580,660

3,580,670
APPARATUS FOR DUPLEXING
Gopal C. Bhagat, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Aug. 12, 1968, Ser. No. 751,986
Int. Cl. G03b *27/32*
U.S. Cl. 355—3 **12 Claims**



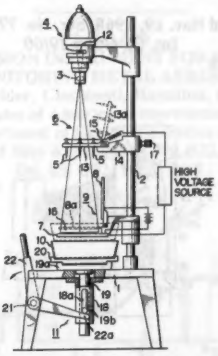
A apparatus for duplex printing by forming on the surface of a first plate an electrostatic latent image conforming to the information to be placed on the first side of a support material, then forming on the surface of a second plate an electrostatic latent image conforming to the information to be placed on the opposite side of the support material, developing the latent images, and transferring the developed image on each plate to its respective side of support material.

3,580,671
EXPOSURE APPARATUS
Edward J. Lavander, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Oct. 24, 1968, Ser. No. 770,367
Int. Cl. G03g *15/04*
U.S. Cl. 355—3 **5 Claims**



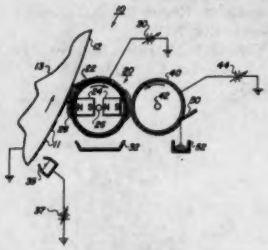
Improved exposure apparatus for use in electrostatic recording machines in which continuous tone and solid area images or line images are produced automatically at the option of the machine operator. The exposure apparatus comprises two exposure slits, each of which is adapted for movement into and out of the optical path in response to discrete electrical signals. One slit is open and used for line images. The other slit is provided with transparent and opaque lines and is used for producing tonal and solid area images.

3,580,672
ELECTROSTATIC PHOTOCOPYING APPARATUS
Sadanao Ando, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Nov. 4, 1968, Ser. No. 773,167
Claims priority, application Japan, Nov. 14, 1967, 73193/67
Int. Cl. G03g *15/10*
U.S. Cl. 355—3 **4 Claims**



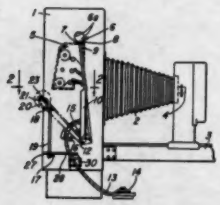
An electrostatic photocopying apparatus having a corona discharge device positioned vertically between a projection optical unit and a copying paper stand which is associated with a developer solution container. The distance between the corona discharge device and the copying paper is maintained sufficiently large to create a weak corona discharge, and the corona discharge device is swingable out of the vertical line to allow operation of the optical unit.

3,580,673
CLEANING APPARATUS
Frank Y. Yang, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Aug. 26, 1968, Ser. No. 755,266
Int. Cl. G03g 15/00
U.S. Cl. 355—15 14 Claims



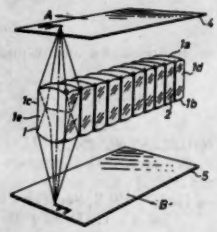
A method and apparatus for cleaning the residual toner image from an electrostatic recording surface for reuse in the imaging system. This is accomplished by contacting the electrostatic recording surface to be cleaned with an electrically insulating magnetic cleaning material which is moved on a transport into sweeping contact with the residual image. An electrical potential is applied to the transport of opposite polarity to the residual image and of a magnitude sufficient to pull the residual image onto the magnetic cleaning material which wipes the residual image enabling mechanical as well as electrostatic forces to remove the residual image. The residual image is removed from the magnetic cleaning material by contacting it with an electrically biased member which is connected to a voltage potential of sufficient magnitude to remove the image from the cleaning material onto the surface of electrical biasing member ensuring continuous removal of the residual image for subsequent reuse in the imaging system.

3,580,674
DEVICE FOR FAST REMOVAL OF EXPOSED FILM FROM THE SUCTION BOARD OF PROCESS CAMERAS AND DELIVERY TO A SUBSEQUENT PROCESS STATION
Kurt Schunck, and Waldemar Baunach, Frankfurt, Germany, assignors to Klimsch & Co., Frankfurt Main, Postfach, Germany
Filed Nov. 19, 1968, Ser. No. 777,037
Int. Cl. G03b 29/00
U.S. Cl. 355—28 9 Claims



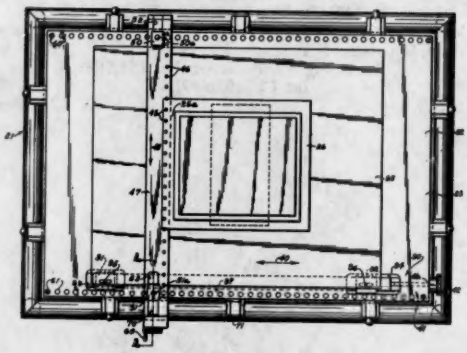
A device for the speedy removal of exposed light sensitive material such as films, foils, or papers from an appropriate holder in the exposure plane of a process camera, the holder being incorporated in the camera back in such a way that it may be moved out of the exposure plane to a position where the exposed film can be engaged by automatic gripper means and delivered for the automatic transport to a subsequent processing station.

3,580,675
STRIP SCANNING COPYING APPARATUS
Fritz Hieber, Grunwald, Munich; Erich Burger, Unterhaching, and Hans-Peter Huber, Munich, all of, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Nov. 25, 1968, Ser. No. 778,854
Claims priority, application Germany, Nov. 27, 1967, A57,493
Int. Cl. G03b 27/50
U.S. Cl. 355—50 18 Claims



Strip portions of an original are successively scanned by a row of lenses with toric refractive surfaces having a first radius of curvature in the scanning direction and a second smaller radius of curvature in a transverse direction. The first and second radii are selected so that the image of a part of the scanned strip-shaped portion projected by each lens is reversed in the scanning direction only, and not reversed in the transverse direction of the row of lens means the exposed strip-shaped portions of the copy sheet form together a continuous complete legible image of the original.

3,580,676
ART OF PLATE MAKING
Albert J. Sarka, Fairview Park, Ohio, and Trevor H. Blake, Naperville, Ill., assignors to Harris-Intertype Corporation, Cleveland, Ohio, by said Sarka and American Can Company, New York, N.Y., by said Blake
Filed July 5, 1967, Ser. No. 651,298
Int. Cl. G03b 27/04
U.S. Cl. 335—86 13 Claims



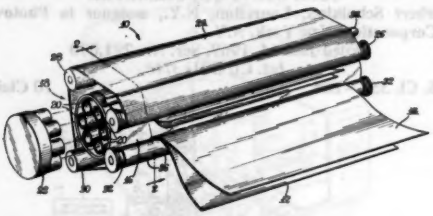
An apparatus for use in making a pair of plates having cooperating metal-forming projections thereon includes a support table. The support table has first and second plate supporting surfaces located on the opposite sides thereof. Means is provided for supporting the table for movement from a first position wherein the first surface of the table is located to support one of the plates and a second position wherein the second surface of the table is located to support the other of the plates. A chase carrier is adapted to be located overlying each of the plates located on the table. A

chase for carrying a negative is carried by the chase carrier. Means is provided for moving the chase and each plate relatively in transverse directions to accurately locate the chase and plates.

3,580,677
EXPOSURE APPARATUS FOR COPY MAKING MACHINES EQUIPPED WITH LIGHT REFLECTIVE CONVEYOR

Terrance G. Seelenbinder, Rolling Meadows, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Filed Sept. 16, 1968, Ser. No. 759,939
Int. Cl. G03b *27/10*
U.S. Cl. 355—110 **2 Claims**

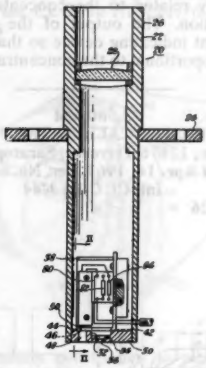


An exposure apparatus for copy making machines includes a light source within a light transmitting drum. A flexible endless belt is trained around a portion of the drum, and superimposed original and copy sheets are carried around the drum between the belt and the drum for exposure of the copy sheet in accordance with an image on the original. The amount of light in the exposure area is increased by providing the belt with a light reflecting surface.

3,580,678
OPTICAL PYROMETERS

Terrance S. Roman, Latrobe, Pa., assignor to Cross Electronics, Inc., Wexford, Pa.

Filed Dec. 18, 1968, Ser. No. 784,647
Int. Cl. G01j *5/48*
U.S. Cl. 356—43 **14 Claims**

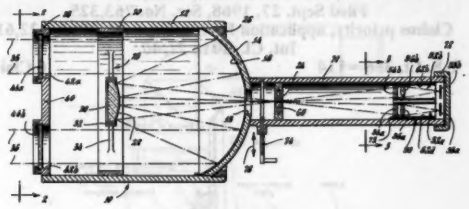


I disclose, in an optical pyrometer system, the combination comprising an optical system for receiving and focusing incident radiation from an object, a beam splitter disposed in a light path of said optical system, for passing a portion of said incident radiation to a direct viewing aperture of said optical system and the remainder of said incident radiation to a second aperture of said optical system, light sensitive detecting means juxtaposed to said second aperture for receiving incident radiation passing therethrough, and said direct viewing aperture and said second aperture being sized so that the light sensitive area of said detecting means is completely covered by said second aperture radiation when an object image focused by said optical system completely fills said direct viewing aperture.

3,580,679
SOLAR SPECTROGRAPHS

Richard S. Perkin, New Canaan, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Sept. 24, 1968, Ser. No. 761,988
Int. Cl. G01j *3/36*
U.S. Cl. 356—76 **7 Claims**

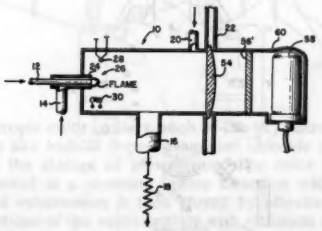


In certain astronomical applications, it is desirable to photograph (or otherwise observe) a celestial body (e.g., spectroheliograms of the sun) at a very narrow spectral bandwidth (i.e., substantially monochromatically). It is proposed to modify an otherwise conventional astronomical telescope so as to allow the simultaneous photographing (or other recording) of, for example, the sun at a plurality of different extremely very narrow wave bands (i.e., discrete, substantially monochromatic spectroheliograms). This may be accomplished by providing a series (say, four) of discrete apertures at the entrance end of an otherwise conventional telescope; and means at the image or exit end of the telescope for separately forming an image from each of the four separate entrance beams. By providing different narrow band-pass filters (or other means for rendering each of the beams monochromatic at a different wavelength), a simultaneous photograph (or other measurement) of the sun at different spectral lines may be made. Comparison of such simultaneous photographs can yield information concerning relative intensity of spectral lines from any part of the sun, free from uncertainty due to, for example, the fluctuating intensity with time of the source (e.g., the sun) itself. Preferably the entrance apertures are provided with moderately broad-pass reflecting filters for rejecting (i.e., reflecting away) most of the radiant energy outside of the vicinity at which each of the separate spectral measurements are being made.

3,580,680
FLAME EMISSION INSTRUMENT FOR SELECTIVELY MONITORING METAL AEROSOLS

Walter Leslie Crider, Cincinnati, Hamilton, Ohio, assignor to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare

Filed May 6, 1969, Ser. No. 822,191
Int. Cl. G01j *3/30, 3/48*
U.S. Cl. 356—87 **6 Claims**



An instrument employing the principle of flame emission spectrophotometry is provided to selectively monitor the

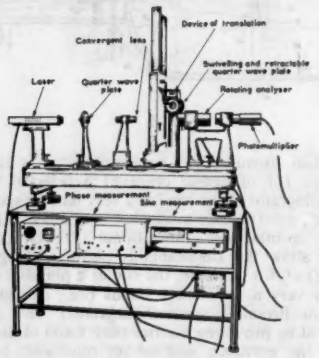
mass concentration of Fe_2O_3 aerosol in animal exposure chambers. The instrument is calibrated over the range from 0.3 to 1.6 milligrams per cubic meter, and the maximum sensitivity is found to be about 3 micrograms of Fe_2O aerosol per cubic meter of air.

3,580,681

APPARATUS FOR AUTOMATICALLY MEASURING THE PROPERTIES OF ELLIPTICALLY POLARIZED LIGHT

Andre Robert, Paris; Claude Bourdon, Montrouge, and Jean Luc Le Goer, Paris, all of, France, assignors to Etat Francais representa par le Ministre des Armees, Delegation Ministerielle pour l'Armenment, Paris, France

Filed Sept. 27, 1968, Ser. No. 763,325
Claims priority, application France, Sept. 28, 1967, 122,613
Int. Cl. G01n 21/40
U.S. Cl. 356—114 6 Claims



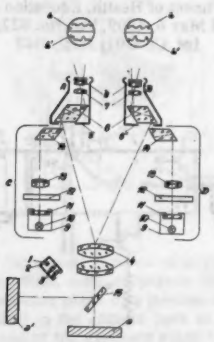
An apparatus for measuring the output of a photomultiplier tube energized by the output of a rotating analyzer which is in the path of a polarized light beam. The AC component of the output signal is compared to a reference signal whose frequency corresponds to twice the rotation rate of the analyzer and the phase difference between the two signals provides the spatial orientation of the polarized light. The amplitude of the AC component is proportional to the phase retardation of the polarized beam components. The DC component of the photomultiplier output is used to control the gain of the photomultiplier.

3,580,682

METHOD AND STEREOSCOPIC OPTICAL APPARATUS FOR DETERMINING THE ROUGHNESS OF THE SURFACES OF MACHINED PARTS

Liviu Iliescu, and Ion Dragos, Bucharest, Romania, assignors to Ministerul Industriei Constructiilor De Masini, Bucharest, Romania

Filed Oct. 30, 1967, Ser. No. 678,805
U.S. Cl. 356—168 1 Claim



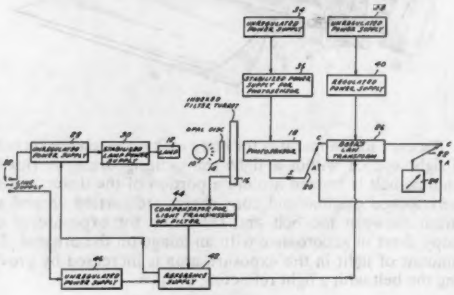
A method and apparatus for stereoscopically determining the roughness of the surfaces of machined parts. A stereoscopic viewing means is provided for presenting to the operator stereoscopic images of the surface of a machined part, and simultaneously stereoscopic images of gauge surfaces, so that a comparison of the surface of the machined part with the surface of the gauges can be made. A projecting means is provided for projecting to the stereoscopic viewing means an image of the machined surface which is to be checked, while a pair of projecting means coact with a pair of gauges to project separate images thereof respectively to a pair of ocular means of the stereoscopic viewing means so that in this way images of the gauges are provided for the operator to be viewed simultaneously with the stereoscopic images of the surface of the machined part.

3,580,683

COMPUTING COLORIMETER

Herbert Schulkind, Laurelton, N.Y., assignor to Photovolt Corporation, New York, N.Y.

Filed Jan. 14, 1969, Ser. No. 791,070
Int. Cl. G01j 3/48
U.S. Cl. 356—184 10 Claims



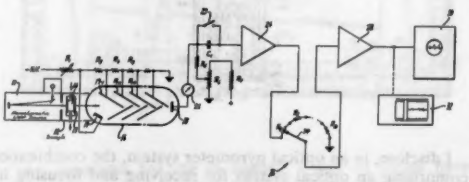
A colorimeter with a computing circuit by which the concentration of a sample fluid is linearly indicated. Light transmitted through a sample vial of the fluid is directed upon a photosensing device which provides an electrical signal corresponding to the intensity of a transmitted light. The electrical signal from the photosensing device is applied to a computing circuit which transforms the applied electrical signal into one linearly related to the concentration of the fluid under investigation. The output of the computing circuit deflects a current indicating device so that the deflection of this device is proportional to the concentration of the fluid.

3,580,684

OPTICAL DENSITY-CALIBRATED PHOTOMETER

Ernest S. Gordon, 12176 Terrence, Saratoga, Calif.

Filed Apr. 14, 1967, Ser. No. 631,061
Int. Cl. G01j 1/44
U.S. Cl. 356—226 8 Claims



A system in which changes in the optical density of a sample are measured by passing a light beam through the sample including a photomultiplier for intercepting the exit beam and providing an electrical signal corresponding to its intensity. An adjustable high voltage source is used to adjust the output voltage of the photomultiplier circuit to a predetermined reference level. An amplifier network and voltage divider having stepped positions calibrated to directly indicate

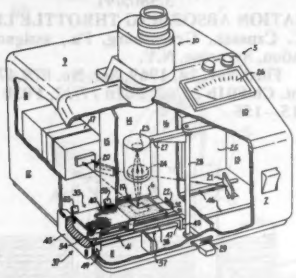
changes in optical density per volt of output couples the voltage to a fixed gain (volt/cm) oscilloscope or recorder so that change in optical density is directly related to the displacement of the oscilloscope or recorder trace.

3,580,685

MEANS FOR EXPOSING NORMALLY COVERED PLATE WHILE MOVING IT TO EXPOSURE SITUATION

Gustave Ragnar Eriksson, Jonkoping, Sweden, assignor to Saab Aktiebolag, Linkoping, Sweden

Filed Nov. 25, 1968, Ser. No. 778,573
Int. Cl. G01n 21/16
U.S. Cl. 356—244 **4 Claims**



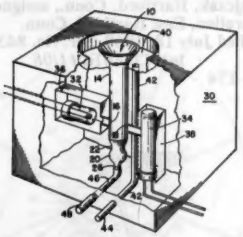
A specimen plate having a lengthwise slidable cover is placed on a carriage to move therewith into and out of an isolation chamber. A cover holder, movable in and out both relative to the carriage and with it, detachably retains the cover and prevents it from moving with the carriage beyond predetermined limits, so that the specimen plate is slid out of the cover and exposed while moving into the isolation chamber with the carriage, and is slid back into the cover as it is moved out of the isolation chamber.

3,580,686

VESSEL HAVING INTERSAMPLE ANTICONTAMINATION CONSTRUCTION

Wallace H. Coulter, Miami Springs, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Mar. 17, 1969, Ser. No. 807,737
Int. Cl. G01n 1/10, 21/16
U.S. Cl. 356—246 **5 Claims**



A vessel particularly constructed to separate each of a sequence of liquids, such that each liquid is free of intersample contamination by a prior liquid. Such contamination, which could be caused by residue of the prior liquid adhering to the walls of the vessel, particularly near its drain, or because of inadvertent liquid or gas bubble backflow from the drain, is obviated by an isolation chamber interposed between a primary chamber of the vessel and its drain. A necked passageway or surface of connection between the two chambers is of such proportions that pressure differentials and surface tension hold a major portion of the fluid in the primary chamber and create a gas barrier between the two chambers.

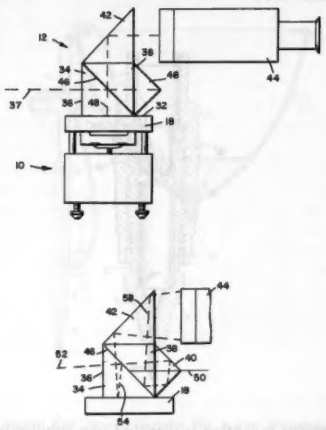
A preferred embodiment of the improved vessel is useful as a cuvette in making hemoglobin determinations and includes a housing having an integral overflow reservoir, drain, and receptacles for radiant energy transmitting and receiving apparatus.

3,580,687

SURVEY LEVEL

Siegfried Hansen, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 20, 1969, Ser. No. 800,970
Int. Cl. G01c 9/24
U.S. Cl. 356—248 **8 Claims**



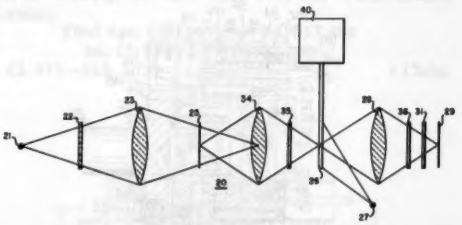
As level reference, the survey level incorporates an optical flat equipped with a leveling servo so that the optical flat is maintained accurately perpendicular to the direction of local gravity. Optics include an image rotating prism and a beam splitter arranged so that light from a target is split, part of it is reflected from the horizontal surface of the optical flat and the images are compared. When they horizontally correspond, the target is in the horizontal survey level reference plane. When the target is off that plane, two vertically displaced images are seen.

3,580,688

INFORMATION STORAGE WITH OPTIC MATERIALS

Irwin Schneider, 2402 Daphne Lane, Alexandria, Va.

Filed Feb. 26, 1968, Ser. No. 708,299
Int. Cl. G02b 27/28; G02f 1/16
U.S. Cl. 356—256 **8 Claims**



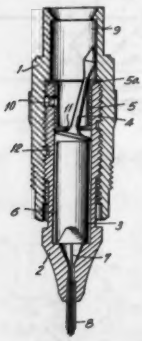
Anisotropic color centers, such as the M_A center in optical materials like sodium doped potassium chloride crystals, are used for the storage of information. The color centers are first oriented in a common lattice direction with polarized light, and information is then stored by effectively causing reorientations of the color centers with radiation of the same wavelength but of altered polarity. The information is read with polarized light at a second longer wavelength. Optical materials are particularly useful for computer storage elements since they have a substantially greater information storage capacity than conventional magnetic core memories.

Apparatus employing the optical storage material is also disclosed.

3,580,689
TUBULAR WRITING HEAD FOR A TUBULAR WRITING PEN

Helmuth Riepe, Hamburg, Germany, assignor to Rapidograph, Inc., Bloomsbury, N.J.

Filed Nov. 18, 1968, Ser. No. 776,370
Claims priority, application Germany, Nov. 24, 1967, P 16 11 558.5
Int. Cl. B43k *1/10*
U.S. Cl. 401—258 3 Claims

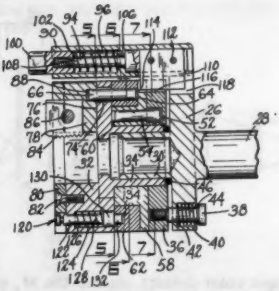


The present invention is directed to a tubular writing head of a tubular writing pen, wherein the tubular writing head comprises a hollow cylindrical member having a writing tube mounted at one end thereof and the interior thereof containing a drop weight with a hair wire which extends through the tube. A loading member in the form of a mushroom-shaped member is also disposed within the interior of the hollow cylindrical member and acts upon the drop weight so as to cause the hair wire to extend through the tube even when the tubular writing pen is not held in a vertical position.

3,580,690
INSERT CHASER DIE HEAD

Arthur A. McClure, Orange, Conn., assignor to Michael Cerrito, New Haven, Conn.

Filed June 9, 1969, Ser. No. 831,601
Int. Cl. B23g *1/00, 5/12*
U.S. Cl. 408—178 17 Claims

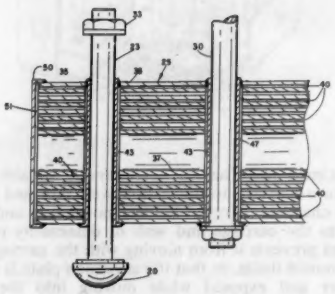


An insert chaser die head having a main frame member to which is attached a control plate having at least one guiding groove on its front face and rotating plate means positioned adjacent said control plate. The rotating plate means has at least one bore therein for supporting an actuating pin member whose end travels in the guiding groove and is biased by a spring located in the groove. At least two more bores are formed in the rotating plate for supporting at least two driven pin members, so that a portion of the ends of the pin members protrude from the rotating plate means. A stationary body member mounted adjacent the rotating plate means has at least two channels for slidably supporting at least two carrier members which, in turn, support individual chasers for cutting threads on workpieces. Individual guideways communicating with each channel are formed in the body member to permit the ends of the driven pin members to pass therethrough and engage cam grooves in the carrier members such that, upon rotation of the rotating plate means, the carrier members are moved toward or away from each other.

3,580,691
VIBRATION ABSORBING THROTTLE LIFT BAR

Charles C. Czuszak, Greensburg, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 24, 1969, Ser. No. 879,473
Int. Cl. F01b *25/02*; F01d *17/12*; F03b *1/04*
U.S. Cl. 415—155 2 Claims

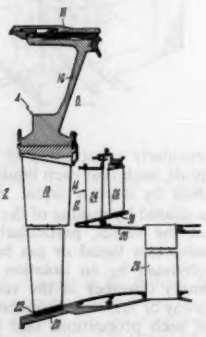


A vibration absorbing throttle valve lift bar arrangement for steam or gas turbines. A plurality of tubular members are nested concentrically one within the other. The assembly is provided with diametrically disposed bushings to slidably receive the lift bar rods and the valve stems. The tubes are dimensioned to have clearance between them. Preferably, a closure cap is sealed to the ends of the outer tube, and the inner tubes have end clearance with the caps.

3,580,692
SEAL CONSTRUCTION

Alojzy Mikolajczak, Hartford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed July 18, 1969, Ser. No. 843,114
Int. Cl. F01d *11/08*
U.S. Cl. 415—174 1 Claim



A seal construction of the honeycomb type for turbomachinery, the cell geometry of the honeycomb being

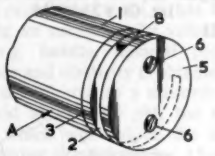
selected and arranged to provide an increase in boundary layer stability and an improvement in overall compressor or turbine performance.

3,580,693

BOUNDARY LAYER CONTROL DEVICES

Ian Clifford Cheeseman, Camberley, and Michael Charles George Smith, Farnham, England, assignors to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Mar. 17, 1969, Ser. No. 808,386
Claims priority, application Great Britain, Mar. 22, 1968, 13885/68
Int. Cl. B64c *27/18*
U.S. Cl. 416—90 **10 Claims**



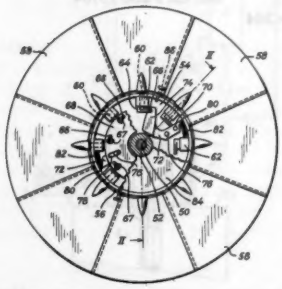
A rotor blade on which lift is induced by circulation control is provided with a chordwise extending slot at the blade tip formed by a plate spaced from the tip by a distance piece extending around part of the blade periphery towards the rear of the blade, i.e., the slot extends around the front and under part of the blade for about 240°. Air blown from the interior of the blade into the slot is discharged radially as a sheet which forms a pneumatic fence and thus modifies flow over the blade tip. The normal tip vortex can be moved radially outwards relative to the blade root and an appreciable drag reduction obtained. In a variation, air is discharged spanwise relative to the blade.

3,580,694

COMBINED FLUID IMPELLERS AND SELF-SEALING CLOSURES

Ole Stig Andersen, Virum, and Ove Rathje, Vanlse, Denmark, assignors to F. S. Andersen, ingenior-og maskinforretning I/S, Vedbak, Denmark

Filed Apr. 7, 1969, Ser. No. 813,912
Claims priority, application Denmark, Apr. 8, 1968, 1559/68
Int. Cl. F01d *7/02*
U.S. Cl. 416—136 **2 Claims**



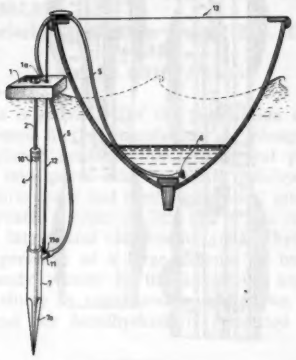
A combined fluid impeller and self-sealing closure has a plurality of blades mounted on the periphery of a rotor ring for pivotal movement about a radial axis. The blades are arranged so that they are in overlapping, sealing relationship with respect to one another when the impeller is at rest, and are in an open, impelling position when the impeller is rotating. The blades are opened by means of weights arranged in the rotor ring which are moved by centrifugal force when the impeller is rotating and rotates a control member arranged inside the rotor ring which in turn rotates the blades to their open position.

3,580,695

BILGE PUMP FOR BOATS

Sven O. G. Tumba, Vartavagen 8 E, 183 63 Hollviksnas, Sweden

Filed Mar. 12, 1969, Ser. No. 806,613
Int. Cl. F04b *35/00*; F16j *15/18*
U.S. Cl. 417—330 **7 Claims**



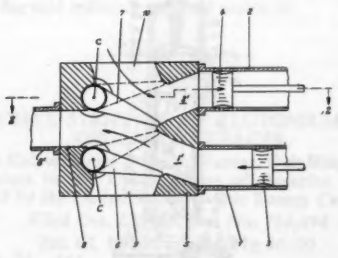
A bilge pump for boats driven by wave movements, the pump being supported from a boat on the end of a line and being entirely immersed in the water a short distance under the surface thereof. The pump as a float connected by means of a rod with a pump piston slidably mounted in a pump cylinder. The wave movements or the rolling of the boat causes the float to move the pump piston upwards and downwards within the cylinder. The wave movements or the rolling of the boat causes the float to move the pump piston upwards and downwards within the cylinder. The induction end of the cylinder is connected to a hose placed in the bilge of the boat for pumping out bilge water, the hose on its inboard end being provided with a nonreturn valve for preventing any backflow. Another nonreturn valve permits the water in the hose to be expelled out into the water surrounding the pump.

3,580,696

CONCRETE PUMP ASSEMBLY

Friedrich Schwing, Rathausstrasse 126, 468 Wanne-Eickel, Germany

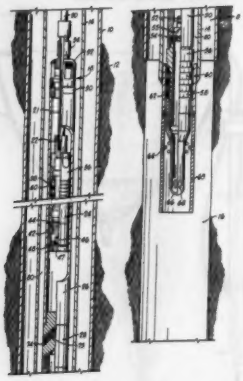
Filed Apr. 18, 1969, Ser. No. 817,480
Int. Cl. F04b *1/00, 21/02, 15/02*
U.S. Cl. 417—515 **1 Claim**



Concrete pump assembly regulated by control flap valves with two pump cylinders and a common outlet opening. On two sides of the outlet opening in a control housing is a pair

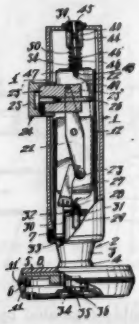
of control flap valves, which are rockable about their axes and alternately connect one of the two pump cylinders with the outlet opening and at the same time connect the other pump cylinder with a suction opening.

3,580,697
PUMP
John O. Youngblood, Rt. 1, Lamont, Okla.
Filed Apr. 23, 1969, Ser. No. 818,640
Int. Cl. F04b *21/00*
U.S. Cl. 417—557 **6 Claims**



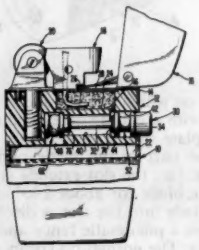
A pump for use in oil wells which includes an elongated production tubing, a working barrel positioned within the production tubing, a special orificed sub connected to the lower end of the working barrel, a standing valve cage connected to the special orificed sub, and a holddown shoe connected to the standing valve cage and engaging the production tubing. A plunger carrying a traveling valve is reciprocably mounted in the working barrel and connected at its upper end to a sucker rod string. The special orificed sub is positioned immediately above the standing valve of the pump and has a bore therethrough which is radially offset from the axis of the aligned bores through the standing valve and the working barrel. Communicating with the bore through the special orificed sub is an orifice which extends upwardly and inwardly from the outside of the special sub.

3,580,698
LIQUEFIED GAS-FUELED SMOKING LIGHTER UTILIZING PIEZO-ELECTRIC ELEMENTS AS THE VOLTAGE GENERATION SOURCE
Kenjiro Goto, Setagaya-ku, Japan, assignor to Mansei Kogyo Kabushiki Kaisha, Kawaguchi, Saitama, Japan
Filed Aug. 26, 1969, Ser. No. 853,068
Claims priority, application Japan, Sept. 11, 1968, 43/78712
Int. Cl. F23q *3/01*
U.S. Cl. 431—255 **8 Claims**



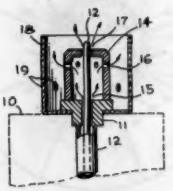
A liquefied gas-fueled smoking lighter utilizing piezoelectric elements as the voltage generation source comprising a casing, a support frame structure disposed within and secured to said casing, a high voltage generation unit comprising piezoelectric elements received in said frame structure and pinched at their opposite ends by a pressure transfer plate and a washer, an eccentric cam disposed on said pressure transfer plate for applying a pressure to said piezoelectric elements, a valve manipulation lever fixedly mounted on the shaft of said cam and having said cam shaft as the axis of rocking movement, and a valve opening and closing member disposed adjacent to said lever with at least a portion of said member positioned in the path of rocking movement of said lever.

3,580,699
FUEL TRANSFER SYSTEM FOR CIGARETTE LIGHTERS
Harry L. Vaughan, Lawrenceville, Ga., assignor to Scripto, Inc., Atlanta, Ga.
Filed Jan. 22, 1969, Ser. No. 793,100
Int. Cl. F23d *3/18*
U.S. Cl. 431—321 **7 Claims**



The fuel reservoir of a cigarette lighter is indirectly connected to the wick chamber by a transfer mechanism which dispenses a controlled amount of fuel to the wick chamber even if the fuel reservoir is under greater pressure than is the surrounding atmosphere.

3,580,700
BURNER FOR CIGARETTE LIGHTER
Thayer C. Hinckley, Inglewood, Calif. (P.O. Box 37218, Los Angeles, Calif. 90037)
Filed Nov. 27, 1968, Ser. No. 779,493
Int. Cl. F23d *13/04*
U.S. Cl. 431—344 **6 Claims**



A burner for a gas fuel cigarette lighter is disclosed which provides a distributor to produce a plurality of gas jets, and an outer shield arranged so that a circular flame is produced which is windproof. This burner structure prevents deposition of carbon around the valve stem, due to incomplete combustion of the fuel, and avoids cleaning and repair.

CHEMICAL

3,580,701

PROCESS FOR PRODUCING SHRINK-RESISTANT WOOL BY TREATMENT WITH HYPOCHLOROUS ACID AND CATIONIC HYDROPHILIC RESINOUS CONDENSATION PRODUCT

Dennis Wray, Belper, and Janet M. Johnson, Duffield, England, assignors to Precision Processes (Textiles) Limited, Ambergate, Derbyshire, England

No Drawing. Filed July 27, 1967, Ser. No. 656,339

Claims priority, application Great Britain, July 29, 1966, 34,288/66

Int. Cl. D06m *15/36*

U.S. Cl. 8—127.6 **13 Claims**

In the shrink-proofing of wool it has been found that a product having an exceptionally valuable combination of properties e.g. handle, flexural properties, tensile strength, resilience and elasticity is obtained when woollen materials are first subjected to a uniform treatment with hypochlorous acid at an acid pH, the treatment being limited to that which will reduce the shrinkage under standardised washing conditions by 15–80%, then impregnated with a water-soluble cationic hydrophilic resinous condensation product containing polyoxyalkylene groups in the molecule and finally heating the wool when impregnated with said condensation product.

3,580,702

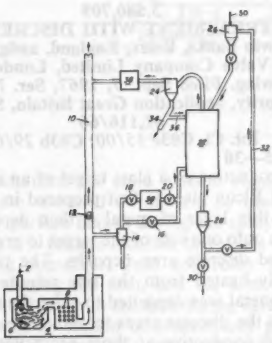
METHOD OF REMOVING SULFUR OXIDES FROM GASES

John G. Myers and Joseph H. Field, Pittsburgh, Pa., assignors to the United States of America as represented by the Secretary of the Interior

Filed Sept. 10, 1968, Ser. No. 758,723

Int. Cl. B01d *53/34*

U.S. Cl. 23—25 **5 Claims**



Sulfur oxides are removed from gases by contacting the same at elevated temperatures with a dry absorbent selected from the group consisting of red mud, retorted oil shale, retorted oil shale treated with sodium hydroxide and mixtures of retorted oil shale and red mud treated with sodium hydroxide. These absorbents may be used on a once-through basis or they may be regenerated. Catalytic oxidation of the gases, though not necessary, may precede contact with the absorbents.

3,580,703

PROCESS FOR THE PURIFICATION OF RESIDUAL GYPSUM FORMED IN THE MANUFACTURE OF PHOSPHORIC ACID BY THE ACTION OF SULPHURIC ACID ON NATURAL PHOSPHATES

Engelhard Pavonet, Chokier, Belgium, assignor to Fosindus Company, Willemstad, Curacao, Dutch Antilles

Continuation-in-part of abandoned application Ser. No. 434,834, Feb. 24, 1965. This application Feb. 27, 1969, Ser. No. 802,890

Claims priority, application France, Feb. 27, 1964, 965,314

Int. Cl. C01f *11/46*

U.S. Cl. 23—122 **14 Claims**

A process is provided for the purification of residual gypsum formed in the manufacture of phosphoric acid by the sulphuric acid reaction on natural phosphates, the gypsum into coarse calcium sulfate hemihydrate crys- and phosphoric acids and continuously fed into an autoclave and treated therein at 105–150° C. to recrystallize the gypsum into coarse calcium sulfate herihydrate crystals in the presence of a large amount of hemihydrate crystals already present in the autoclave, and recover P_2O_5. The slurry is continuously withdrawn from the autoclave and the hemihydrate is separated from the liquid.

3,580,704

COLORIMETRIC INDICATORS FOR DETERMINING pH OF MOTOR OIL

John Pickup, Montreal, and Theodorus G. Brandts and Joseph A. Lichtenberger, Grand'Mere, Quebec, Canada, assignors to Consolidated Paper (Bahamas) Limited, Nassau, Bahamas

No Drawing. Filed Mar. 6, 1967, Ser. No. 620,683

Claims priority, application Canada, Mar. 10, 1966, 954,427

Int. Cl. G01m *21/08, 31/22, 33/26*

U.S. Cl. 23—230 **7 Claims**

The pH of a non-aqueous system which, normally, on contact of a pH color indicator, does not show a detectable change in the color of this indicator, is colorimetrically measured by use of a treated solid adsorbent carrier containing adsorbed thereon a suitable pH color indicator and a non-aqueous, substantially non-volatile liquid solvent common to said indicator and said system, by bringing the non-aqueous system in contact with the carrier. In a preferred embodiment, a method of indicating the pH of a motor oil is described which consists in contacting the used motor oil with a paper which has previously been treated with a pH colour indicator soluble in a non-ionic solvent and a surface-active agent which is a non-ionic solvent for said indicator and said motor oil.

3,580,705

SELECTIVE STRIPPING OF PLUTONIUM FROM ORGANIC EXTRACTS

Charles Coleman and Boyd S. Weaver, Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

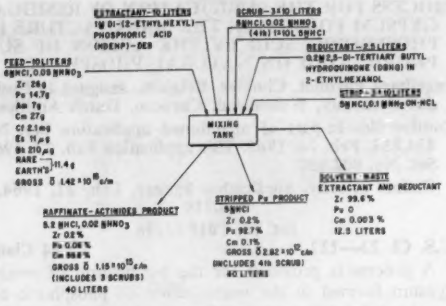
Filed Oct. 2, 1968, Ser. No. 764,494

Int. Cl. B01d *11/00;* **C01g** *56/00*

U.S. Cl. 23—341 **5 Claims**

Dialkyl substituted hydroquinones dissolved in an organic solvent have been found effective in reducing plutonium in the +4 and +6 oxidation states dissolved

in diesters of orthophosphoric acids such as di(2-ethylhexyl) phosphoric acid to the +3 oxidation state. This



enables quantitative stripping of the plutonium with aqueous solutions of hydrochloric acid.

3,580,706

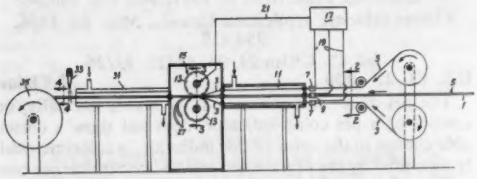
METAL STRAND HAVING A CHROMIUM STEEL CORE AND CORROSION-RESISTANT CLADDING

Gerald H. Frieling, Jr., Barrington, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Original application May 3, 1965, Ser. No. 452,767, now Patent No. 3,372,465. Divided and this application Dec. 28, 1967, Ser. No. 694,222

Int. Cl. B32b *15/00*

U.S. Cl. 29—196.3 **6 Claims**



An austenitic chromium steel core, from the surface of which chromium oxide has been removed, in a cleaning solution is back-plated in the solution with a solid-phase bondable chromium-free metal, such as copper or a precious metal such as, for example, silver, gold or the like. Clean strips of a cupronickel alloy or titanium are positioned on opposite sides of the plated core and moved through a reducing atmosphere, and thence directly into the bite between squeezing rolls. The core and strips are rapidly heated in their passage through the reducing atmosphere. The rolls squeeze the strips around the plated core to effect solid-phase bonding between the strips and the plating. The margins of the strips are also squeezed together and become solid-phase bonded to one another. Upon emergence of the clad material from the rolls, it is at once quickly cooled in a nitrogen atmosphere. Waste beyond the pinch lines is removed. By means of quick heating and quick cooling, excessive precipitation in the steel of detrimental carbides is avoided and the strength of the steel preserved. The plating shields the steel core against the inherently instantaneous oxidation of the steel surface to chromium oxide when exposed to air and substitutes the more slowly oxidizing surface of the copper or precious metal for effective solid-phase bonding under pressure. The resulting cupronickel or titanium surface of the resulting clad strand is corrosion resistant and in the case of the cupronickel is antifouling because of the cupric ions provided thereby when used for making submarine cables or the like.

3,580,707

PROCESS FOR PREPARING OVERBASED BARIUM SULFONATES, PRODUCTS THEREFROM AND USE IN DISTILLATE FUEL OILS

Warren L. Perilstein, Orchard Lake, Mich., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed July 30, 1969, Ser. No. 846,229

Int. Cl. C10l *1/24, 1/32*

U.S. Cl. 44—51 **20 Claims**

A process for preparing overbased barium olefin sulfonates featuring the use of (1) barium sulfide treated with acetic acid, (2) olefin sulfonic acids, and (3) sulfur dioxide; a product obtained from this process and the use of these products in distillate fuels are described.

3,580,708

METHOD OF FORMING CUTTING TOOL MATERIALS CONSISTING OF ALUMINA AND TITANIUM CARBIDE

Kazuki Ogawa, Fukuoka-shi, and Michito Miyahara, Fukuoka-ken, Japan, assignors to Nippon Tungsten Company, Ltd., Fukuoka-shi, Japan

No Drawing. Filed Mar. 6, 1969, Ser. No. 805,024

Int. Cl. B24d *3/02;* C04b *31/16*

U.S. Cl. 51—307 **1 Claim**

A method of preparing cutting tool materials comprising mixing alumina and titanium carbide particles having an average grain size of less than 3 microns placing said mixture in a graphite mold and hot pressing at a temperature between 1500–1800° C. and a pressure between 150-400 kg./sq. cm. for a period of time up to 40 minutes.

3,580,709

GLASS TREATMENT WITH DISCRETE AREAS

Peter Baldwin Banks, Essex, England, assignor to English Electric Valve Company Limited, London, England

No Drawing. Filed Sept. 7, 1967, Ser. No. 665,995

Claims priority, application Great Britain, Sept. 14, 1966, 41,116/66

Int. Cl. C03c *15/00;* C03b *29/00*

U.S. Cl. 65—30 **7 Claims**

In the production of a glass target of an image orthicon a target of Elcon glass is first prepared in oxidising conditions. A thin layer of metal is then deposited through a fine mesh onto one side of the target to produce a mosaic of separated discrete area deposits. The target is finally differentially heated from the side remote from that on which the metal was deposited to raise the temperature of the glass at the discrete areas to about the softening point to render it conductive at those areas without changing the conductivity at the boundaries of the areas.

3,580,710

PARTICLE TUBE FUSION FURNACE

Richard G. Britt, Burlington, and Frederick A. Loughridge, Manchester, Mass., assignors to Sylvania Electric Products Inc.

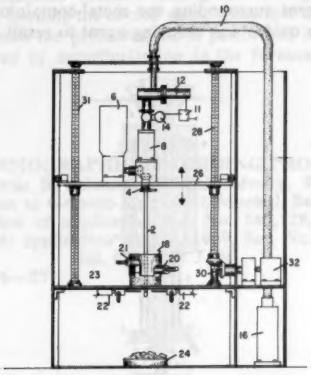
Filed Nov. 15, 1968, Ser. No. 776,208

Int. Cl. C03b *3/00, 19/06*

U.S. Cl. 65—144 **5 Claims**

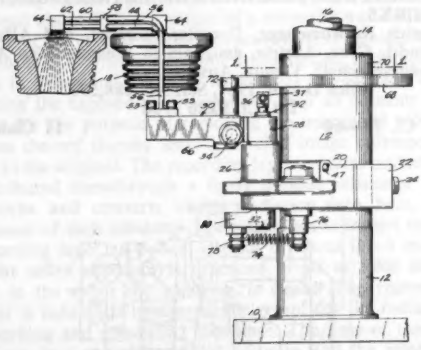
Equipment for the manufacture of quartz bodies which are free of air pockets including a vacuum system associ-

ated with a holder for quartz tubing. The end of quartz tubing is disposed within a furnace for softening. When



soft, the quartz is cut off and a body of air-free quartz is formed.

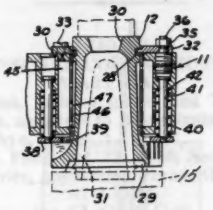
3,580,711
SPRAYING MECHANISM FOR GLASSWARE FORMING MACHINES
Joseph R. Hamilton, Anderson, Ind., assignor to Lynch Corporation, Anderson, Ind.
Filed Aug. 5, 1968, Ser. No. 750,133
Int. Cl. C03b *39/00*
U.S. Cl. 65—169 **12 Claims**



Spraying mechanism for solid parison blanks wherein spray nozzles are mounted on an arm so that they can be located over parison blanks during the spraying operation and swung to a remote location therefrom during the parison pressing operation. Cam and roller means are provided for swinging the arm, and the arm is of dual character so that damage to the arm during certain operations is eliminated by reason of a secondary part of the arm being swingable upwardly out of the way if struck by an obstruction.

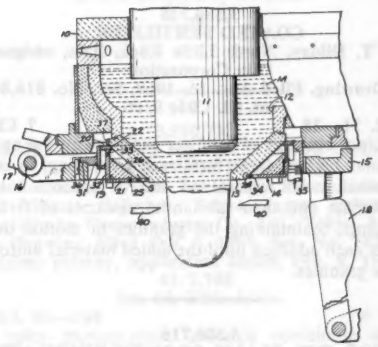
3,580,712
GLASS FORMING MOLD ELEMENTS WITH YIELDING SUPPORTS
Eustace H. Mumford, Ottawa Lake, Mich., assignor to Owens-Illinois, Inc.
Filed Feb. 10, 1969, Ser. No. 797,974
Int. Cl. C03b *9/00, 9/40, 11/00*
U.S. Cl. 65—307 **11 Claims**

A glass forming machine wherein a plurality of charges of glass are delivered to a plurality of parison or blank mold cavities and are formed into parisons after which the parisons are inverted and delivered to a blow mold at another station for forming the final article.



Means are provided for yielding by supporting and cooling each parison or blank mold.

3,580,713
APPARATUS FOR FEEDING GLASS
Helmut T. Schirm, Toledo, and Robert O. Zeigler, Holland, Ohio, assignors to Owens-Illinois, Inc.
Filed Nov. 29, 1968, Ser. No. 779,705
Int. Cl. C03b *7/00*
U.S. Cl. 65—327 **18 Claims**

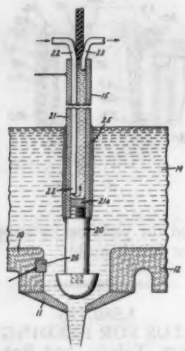


An apparatus for feeding glass comprising a forehearth having an orifice. A refractory orifice ring is supported beneath the orifice by a holder assembly which in turn is supported by a ring support. The holder assembly includes a burner which directs flames against the outer periphery of the orifice ring.

3,580,714
DISCHARGE CONTROL ELEMENT FOR GLASS-MELTING FURNACES
John R. Lucek, Pittsfield, Mass., assignor to General Electric Company
Filed Oct. 30, 1968, Ser. No. 771,853
Int. Cl. C03b *5/32*
U.S. Cl. 65—330 **4 Claims**

The application discloses a discharge control element, such as a needle or plunger, for use in glass-melting furnaces. Such control elements, being movable or adjustable in operation, are adapted to be only partially immersed in molten glass with the immersed tip positioned adjacent a discharge orifice for control of stream-feeding or gob-feeding of the molten glass to utilization equipment. The tip of the rod is formed of a material substantially impervious to erosion in molten glass, and the shank portion of the rod is formed of a metal subject to rapid erosion in molten glass but resistant to oxidation in air. The shank portion is cooled to coat its immersed part with solid glass to protect it against erosion by the molten glass. As disclosed, a preferred form of discharge control element com-

prises a rod having a tubular shank portion of steel provided with passages for the circulation of cooling water,



and a removable immersed tip or head portion formed of molybdenum.

3,580,715

COATED FERTILIZER

Joseph T. Dilday, North Little Rock, Ark., assignor to Olin Corporation

No Drawing. Filed Apr. 16, 1969, Ser. No. 816,808
Int. Cl. C05c *9/00*
U.S. Cl. 71—28 **7 Claims**

Tenacious coatings of fertilizer supplements are applied to granular high analysis fertilizers, by adding, in order, minor amounts of mineral oil and of aqueous calcium lignosulfonate and then substantial amounts of fertilizer supplements, maintaining the granules in motion during and after each addition until the added material uniformly coats the granules.

3,580,716

METHOD FOR PLANT GROWTH REGULATION

Dorsey R. Mussell, Clare, and Richard A. Schwartzbeck, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Apr. 10, 1968, Ser. No. 720,393
Int. Cl. A01n *5/00, 9/20*
U.S. Cl. 71—76 **4 Claims**

Disclosed is a method involving the exposure of plants and plant parts to a growth regulating amount of tetraisopentylammonium bromide or tetraisopentylammonium chloride, or compositions thereof. Such practice is particularly useful for the regulation of the growth pattern of plant life, particularly as evidenced by the retardation of growth and enhancement of maturation.

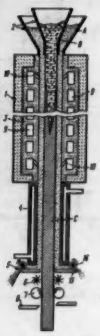
3,580,717

METHOD OF OBTAINING A SPONGY METAL INGOT IN A SHAFT FURNACE

Mikhail Ivanovich Kononov, Svobodny prospekt 9, korpus 2, kv. 55; Evgeny Anatolievich Krasheninnikov, Ulitsa A. Sviridova 1, kv. 7; Vladimir Fedorovich Knyazev, Nikitinskaya ulitsa 5, kv. 53; Evgeny Nikolaevich Vasiliev, Ulitsa Barklaya 5, korpus 1, kv. 54; Petr Yakovlevich Nasonov, 5 Parkovaya ulitsa 26, kv. 89; and Evgeny Petrovich Timofeev, Golynaovo 18, kv. 89, all of Moscow, U.S.S.R.

Filed Sept. 22, 1967, Ser. No. 669,815
Int. Cl. C21b *13/02*; C22b *5/02*
U.S. Cl. 75—37 **3 Claims**

A method of obtaining a spongy metal comprises reducing metal-containing oxides with a solid reducing agent in an externally heated shaft furnace by charging the furnace with separate flows of the metal-containing oxides and a solid reducing agent, the metal-containing oxides and reducing agent flowing coaxially with the reducing agent surrounding the metal-containing oxides. Heating the oxides and reducing agent to result in reduc-



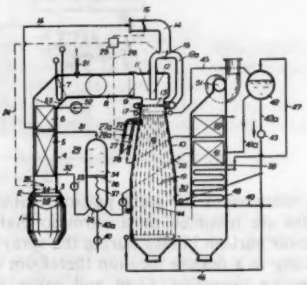
tion of the oxides and sintering of the metal thereby produced into a sponge metal ingot. The metal ingot passes from the furnace through an opening in a receiving table while the reducing agent is removed from the table.

3,580,718

METHOD FOR THE UTILIZATION OF HOT WASTE GASES FROM FURNACES OF METALLURGICAL WORKS

Heinrich Rasworschegg, Demeter Markow, and Alfred Sandri, Graz, Austria, assignors to Waagner-Biro Aktiengesellschaft, Vienna, Austria

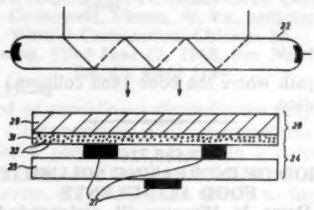
Filed Dec. 6, 1967, Ser. No. 688,593
Int. Cl. F22b *1/18*
U.S. Cl. 75—60 **11 Claims**



A method of utilization of combustible hot waste gases from furnaces of metallurgical works, in particular from steel converters, in an installation for the utilization of waste heat, comprising the steps of first cooling the hot combustible waste gases for removing at least partially the enthalpy of the gases by passing them in indirect heat exchange relationship with water and air, burning the so cooled waste gases in a combustion chamber with the preheated air and without intermediate storing of the waste gases flowing the products of combustion so produced through the combustion chamber and feeding the preheated water to the combustion chamber and flowing it therethrough in indirect heat exchange relationship with the products of combustion to generate steam, whereby both the enthalpy of the waste gases and the heat of

combustion thereof are utilized in the generation of the steam, adding reaction heat liberated during the burning of the cooled waste gases in the combustion chamber with an additional medium during the cooling step; and the step of burning the cooled waste gases in a combustion chamber with the preheated air is performed in response to the speed of decarburization in the furnace.

3,580,719
THERMOGRAPHIC RECORDING PROCESS
Eric Maria Brinckman, Mortsel-Antwerp, Belgium, assignor to Gevaert-Agfa N.V., Mortsel, Belgium
Continuation of application Ser. No. 560,128, June 24, 1966. This application Aug. 4, 1969, Ser. No. 849,582
Int. Cl. G03c *5/04*
U.S. Cl. 96—27 **10 Claims**



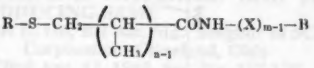
Information is reproduced by the steps of exposing to a mainly visible light image a recording layer containing at least about 80% by weight of a normally water-soluble polymer of certain selected types which is substantially insensitive to visible light but when heated undergoes a loss in its normal solubility in aqueous solvents and contacting the exposed recording layer with an aqueous solvent for the purpose of removing the unexposed soluble areas thereof thereby leaving a relief image corresponding to the original. The recording layer contains uniformly distributed therethrough a finely divided substance that absorbs and converts visible radiation into heat, the amount of such substance being sufficient to impart to the recording layer an optical density of about 0.2–1 in the event reflex exposure is practiced or of at least about 0.2 in the event the exposure is direct. The recording layer is substantially transparent except for the radiation absorbing and converting substance. The time of the exposure does not exceed 10^{-2} seconds, and the intensity of the radiation is sufficiently large as to generate within that time by virtue of the absorption and conversion effect of the substance sufficient heat to produce a loss in solubility in the polymer in the exposed area.

3,580,720
PHOTOGRAPHIC SENSITIZED PAPERS EXCELLENT IN FLUORESCENT BRIGHTENING EFFECT AND PROCESS FOR PREPARING THE SAME
Yasushi Ohyama, Takatsuki-shi, and Sadayuki Miyazawa, Otokuni-gun, Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan
No Drawing. Filed Mar. 26, 1969, Ser. No. 810,795
Claims priority, application Japan, Mar. 30, 1968, 43/20,412
Int. Cl. G03c *1/92, 1/84, 1/08*
U.S. Cl. 96—82 **4 Claims**

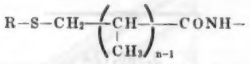
A photographic sensitized paper can be greatly enhanced in fluorescent brightening effect by incorporating into a binder in the photographic layer a starch derivative having in combination an aminoguanidine group and an aldehyde group. This starch derivative is a mordant which makes the binder completely non-diffusible to a fluorescent dye.

3,580,721
LIGHT-SENSITIVE COLOR-PHOTOGRAPHIC MATERIAL
Masakuni Iwama, Isaburo Inoue, and Teruo Hanzawa, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
No Drawing. Filed Oct. 22, 1968, Ser. No. 769,707
Claims priority, application Japan, Oct. 23, 1967, 42/67,820
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **8 Claims**

Couplers for inclusion into the silver halide emulsion layer of a color-photographic material; said coupler having the formula:



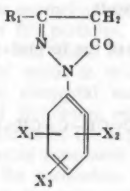
wherein R is an aliphatic hydrocarbon residue having 8–18 carbon atoms; B is a coupler residue; X is a group bonding B to



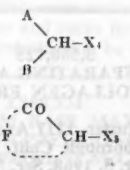
and *m* and *n* are 1 or 2.

3,580,722
LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC EMULSION
Kenro Sakamoto, Takao Takahashi, Takeo Koitabashi, and Mitsuto Fujiwara, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
No Drawing. Filed Feb. 6, 1969, Ser. No. 797,277
Claims priority, application Japan, Feb. 9, 1968, 43/7,748
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **6 Claims**

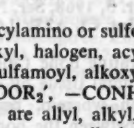
A color photographic emulsion containing a color former of the formula:



and at least one compound of the formula:



or



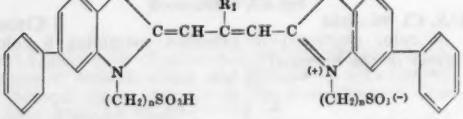
wherein R_1 is alkyl, acylamino or sulfonamido; X_1, X_2 and X_3 are hydrogen, alkyl, halogen, acylamino, alkylcarbamoyl, sulfonamido, sulfamoyl, alkoxy or aryloxy; A and B are $-COR_2$, $-COOR_2'$, $-CONHR_2''$ or $-CN$; R_2, R_2', R_2'', X_4 and X_5 are allyl, alkyl, aryl, cycloalkyl or araklyl and F is an atom or radical necessary to form a pyrazolone ring.

3,580,723
LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC EMULSION
Shui Sato and Kaiichiro Sakazume, Tokyo, and Eiichi Sakamoto, Hanno-shi, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Dec. 12, 1968, Ser. No. 783,222
Int. Cl. G03c *1/28*
U.S. Cl. 96—122 **12 Claims**

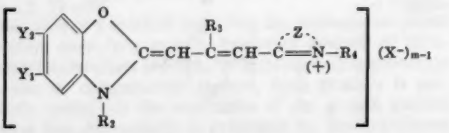
Light sensitive silver halide photographic emulsions are supersensitized by coating with a supersensitizer constituted by a combination of two different oxacarbocyanine dyes.

3,580,724
LIGHT-SENSITIVE SUPERSENSITIZED SILVER HALIDE COLOR PHOTOGRAPHIC EMULSIONS
Shui Sato, Kaiichiro Sakazume, and Tateshi Iytaka, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd.
No Drawing. Filed May 28, 1969, Ser. No. 828,750
Claims priority, application Japan, June 4, 1968, 43/37,740
Int. Cl. G03c *1/28*
U.S. Cl. 96—124 **5 Claims**

A supersensitized silver halide emulsion containing in combination a sensitizing dye of the formula



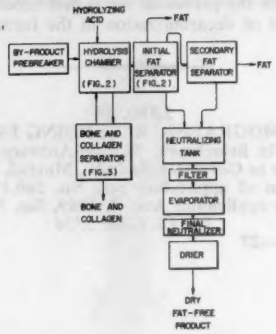
and a sensitizing dye of the formula



wherein the various symbols are described in the claims.

3,580,725
PROCESS FOR SEPARATING AND RECOVERING BONE AND COLLAGEN FROM ANIMAL BY-PRODUCTS
William Kuster, 1211 Avondale Road, Hillsborough, Calif. 94010
Filed Apr. 3, 1968, Ser. No. 718,629
Int. Cl. A23k *1/10*
U.S. Cl. 99—7 **4 Claims**

Method for separating bone (and collagen) from partially hydrolyzed animal tissue by employing an aqueous hydrolyzing solution wherein, because of the specific gravity differential between the bone (and collagen) and the fleshy tissue, the fleshy tissue will at least temporarily float in the solution while the bone (and collagen) will sink. As a result, the bone (and collagen) are separated from the fleshy tissue by passing the solution along an



elongated path where the bone (and collagen) settle out of the solution.

3,580,726
METHOD OF INCREASING SOLUBILITY OF FOOD ACIDULENTS
Charles Dame, Jr., Wheaton, Ill., assignor to General Foods Corporation, White Plains, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 694,417, Dec. 29, 1967, which is a continuation-in-part of application Ser. No. 370,356, May 26, 1964. This application Nov. 24, 1969, Ser. No. 879,623
Int. Cl. A23l *1/00*; B01j *1/00*
U.S. Cl. 99—78 **4 Claims**

Ground fumaric or adipic acid is impregnated with an aqueous solution of propylene gylcol, agglomerated, and dried. The dried agglomerates are then subdivided to provide an acid of increased solubility.

3,580,727
PROCESS FOR MAKING EXPANDED SNACK PRODUCT
Clayton O. Gulstad, Coon Rapids, Minn., assignor to General Mills, Inc.
No Drawing. Filed Aug. 28, 1967, Ser. No. 663,503
Int. Cl. A23l *1/10*
U.S. Cl. 99—81 **11 Claims**

A new food product and process for making it by explosively puffing grain kernels which have been tempered with a hull modifying and flavoring agent, milling the puffed grain into flour or meal, mixing the flour with water to make a dough which is formed into chips, and subjecting the chips to intense heat.

3,580,728
PROCESS FOR MAKING EXPANDED SNACK PRODUCT
Clayton O. Gulstad, Coon Rapids, and Francis J. Eastburn, Minneapolis, Minn., assignors to General Mills, Inc.
No Drawing. Filed Aug. 28, 1967, Ser. No. 663,501
Int. Cl. A23l *1/10*
U.S. Cl. 99—81 **13 Claims**

A new food product and process for forming it. A flour is formed by explosively puffing a cereal grain and milling the puffed grain to form a pulverulent material. A dough, formed by combining the flour with water and one or more flavoring ingredients, is then formed into pieces which are subjected to intense heat to produce the final product.

3,580,729

PROTEIN-SUPPLEMENTED PEANUT SPREAD

Richard T. Darragh and John A. Succo, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Feb. 4, 1969, Ser. No. 796,584
Int. Cl. H23l *1/38*
U.S. Cl. 99—128 7 Claims

A peanut spread supplemented with soybean protein and having a peanut butter-like eating quality, color and flavor is prepared by admixing particular amounts of soy flour and liquid vegetable oil with conventional peanut butter ingredients, heat treating the resulting combination by maintaining it at a temperature ranging from about 300° F. to about 500° F. for from about 1 to about 5 minutes, and chilling the heat-treated mixture to a temperature ranging from about 35° to about 85° F., for example in a scraped wall heat exchanger.

3,580,730

DISCONTINUOUS POLYCARBONATE COATINGS

Thomas S. Grabowski, Vienna, W. Va., assignor to Borg-Warner Corporation, Chicago, Ill.

No Drawing. Filed June 12, 1968, Ser. No. 736,254
Int. Cl. B44d *1/44*
U.S. Cl. 117—8 1 Claim

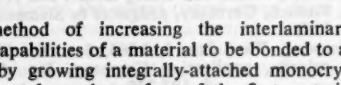
A method of providing a discontinuous polycarbonate coating on a thermoplastic substrate comprising the steps of dissolving a polycarbonate resin in a polycarbonate solvent, applying the resulting solution to a thermoplastic substrate, evaporating the solvent to form a continuous polycarbonate coating, and subsequently treating the coating with a developing solvent to form a discontinuous coating.

3,580,731

METHOD OF TREATING THE SURFACE OF A FILAMENT

John V. Milewski, Saddle Brook, and James J. Shyne, Caldwell, N.J., assignors to General Technologies Corporation

Filed Sept. 26, 1967, Ser. No. 670,628
Int. Cl. C01b *31/30;* C23c *11/08*
U.S. Cl. 117—66 14 Claims



The method of increasing the interlaminar shear strength capabilities of a material to be bonded to another material by growing integrally-attached monocrystalline whiskers out from the surface of the first material both to roughen its surface for bonding to a deposited matrix material, or to a plastic, and to change its surface chemistry to improve bonding, for instance to a resin. The invention includes the reinforcing of fiberous structures by the intertwining of whiskers grown across voids therebetween, and further includes various whisker-grown structures per se.

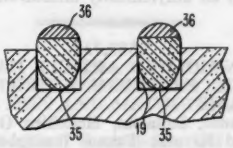
3,580,732

METHOD OF GROWING SINGLE CRYSTALS

A Eugene Blakeslee, Mount Kisco, Thomas F. Gukelberger, Jr., Hopewell Junction, and Vincent J. Lyons, Poughkeepsie, N.Y., asssignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 15, 1968, Ser. No. 697,770
Int. Cl. B44d *1/02*
U.S. Cl. 117—106 19 Claims

A method for selectively growing single crystal islands in a dielectric substrate and the resulting structure. The substrate has recesses formed in its surface to receive bodies therein. By applying a temperature gradient across each of the bodies throughout the entire heating cycle, nucleation occurs only at a bottom point on each of the



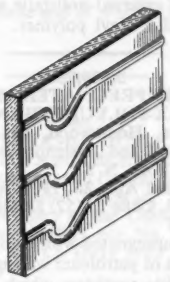
bodies when a vapor containing the material to be nucleated is passed over the bodies with the material of the bodies being molten.

3,580,733

FOOD COOKING APPARATUS HAVING CONTINUOUS CLEANING PROPERTIES AND PROCESS FOR PRODUCING SAME

Robert E. Ott, Bel Air, Md., assignor to SCM Corporation, Cleveland, Ohio

Filed Apr. 17, 1969, Ser. No. 817,128
Int. Cl. C23d *5/00*
U.S. Cl. 117—129 11 Claims



An improvement in the process for producing an adherent ceramic coating on a metal substrate used in food cooking apparatus, the coating having the continuous cleaning property of diminishing accumulation of carbonaceous residue which results from the exposure to grease spatters at ordinary operating temperatures, can be effected by: applying to the substrate in intimate contact with each other an enameling composition comprising alkali-bearing glass frit particles, about ½ to 25% halide basis weight of said glass frit, and about 2–75 parts, per 100 parts of solids in said enameling composition, of particulate elemental metal selected from the group consisting of aluminum, magnesium, high alloys of either, and mixtures of the same; heating the resulting deposit in a heating zone until it forms, by interaction of the frit and the particulate metal, an integral, porous, sorptive surface structure containing crystalline devitrification products; then arresting said interaction in a cooling zone before substantial coalescence of the structure occurs. Cooking oven walls, fixed or removable panels, broiler pans and racks incorporating the resulting coated metal substrates can be made.

3,580,734

ANTISTATIC FILM BASE MATERIAL AND PROCESS FOR PREPARING SAME

Margaret L. Clachan, Patrick T. McGrail, and Basil R. Shephard, Brantham, Manningtree, England, assignors to Bexford Limited, Manningtree, England

No Drawing. Filed Sept. 21, 1967, Ser. No. 669,384
Claims priority, application Great Britain, Sept. 30, 1966, 43,843/66
Int. Cl. B32b *27/06;* C09k *3/16*
U.S. Cl. 117—138.8 6 Claims

This application describes a process of rendering film base less prone to pick up static electricity which com-

prises coating the film base with a layer consisting essentially of a sodium, potassium or lithium salt of a copolymer of an alpha-beta unsaturated dicarboxylic acid or anhydride with an ethylenically unsaturated comonomer.

3,580,735

POLYOLEFIN-MOLDED ARTICLE HAVING GOOD ANTISTATIC PROPERTY AND PREPARATION OF THE SAME

Yutaka Shimodoi, Suita-shi, Heiichiro Ootake, Kouichi Mihara, and Kiyoshi Takao, Ibaragi-shi, and Shogo Matsuda, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Dec. 30, 1968, Ser. No. 788,005
Claims priority, application Japan, Dec. 30, 1967, 43/84,662, 43/84,663
Int. Cl. B44d *1/22*
U.S. Cl. 117—138.8E **6 Claims**

In a polyolefin fiber, containing therein an internal antistatic agent such as quarternary ammonium salts, glycerides or higher fatty acid amides and a modifying agent selected from aluminum oxide, calcium chloride, calcium carbonate, diphenyl phthalate, tricresyl phosphate and polyethylene glycol, an improved article having more durable antistatic effect by coating the outer layer of the article with an external antistatic agent such as relatively high molecular vinyl polymer.

3,580,736

PAPERBOARD IMPREGNATED WITH A PETROLEUM WAX-POLYURETHANE BLEND

Hallard C. Moyer, Homewood, Ill., and Eugene M. Fauber, Hammond, Ind., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Apr. 26, 1967, Ser. No. 633,717
Int. Cl. C08g *51/52;* **D21h** *1/40*
U.S. Cl. 117—155 **7 Claims**

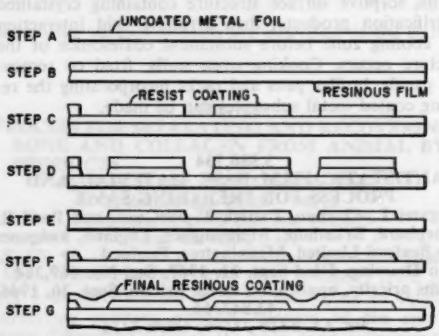
Paperboard is impregnated with a composition containing a major amount of petroleum wax and a minor amount of a wax-compatible urethane which is prepared from an excess of a hydrocarbon diisocyanate and a hydroxy-terminated diene polymer. The preferred diisocyanate is tolylene diisocyanate and the preferred polybutadiene has at least two average terminal hydroxyl groups in the allylic position. Impregnation of paperboard with the composition provides a product having significantly improved strength, rigidity and water resistance.

3,580,737

CHEMICAL RADIUSING CONDUCTOR EDGES OF FLAT CABLE

Edward J. Traynor, Jr., Stoughton, Mass., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 18, 1968, Ser. No. 698,968
Int. Cl. C23b *1/02;* **B44d** *1/18*
U.S. Cl. 117—212 **10 Claims**



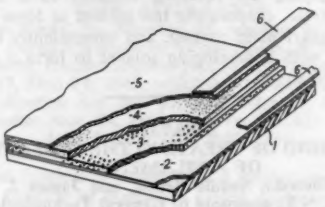
A metal foil is coated on one side with a resinous film. An etch resist coating is deposited on the metallic foil in a predetermined pattern to produce a desired configuration of metal conductor strips after the composite is passed first through a metal etching solution and then a solution which removes the resist coating. The resulting flat metallic conductors have sharp undercut etched edges. The composite is again passed through a metal etching solution. The sharp conductor edges are thereby rounded so that the metallic conductors are reduced to a cross section without sharp edges. The exposed conductors are coated with a resinous film to complete the insulation of the conductors. The rounded edges of the conductors permit the cable to be creased without cracking the insulation.

3,580,738

PLASTICS MATERIALS WITH CONDUCTIVE SURFACES

Peter Whitten Ranby and John Lenard Northwood, London, England, assignors to Thorn Electrical Industries Limited, London, England

Continuation of abandoned application Ser. No. 511,428, Dec. 3, 1965. This application Feb. 16, 1970, Ser. No. 10,094
Claims priority, application England, Dec. 4, 1964, 49,510/64
Int. Cl. B44d *1/14, 1/18*
U.S. Cl. 117—215 **4 Claims**



A method of making light transmitting plastics electrically conductive including depositing a layer of indium metal upon the plastic, heating the layer and then washing it with an acid.

3,580,739

GRID ELECTRODE FOR ELECTRONIC TUBES

Gunter Ciriack, Berlin, and Georg Eckert and Horst Hofmann, Munich, Germany, assignors to Siemens Aktiengesellschaft

No Drawing. Filed Jan. 2, 1968, Ser. No. 694,804
Claims priority, application Germany, Jan. 4, 1967, S 107,728
Int. Cl. H01j *19/38;* **C23b** *5/50*
U.S. Cl. 117—217 **10 Claims**

The invention is directed to electronic tubes wherein a grid electrode is constructed of any alloy containing a zirconium oxide which may be added either to the base metal forming the grid wires in amounts of 0.1 to 2% by weight or to a coating of zirconium in amounts of 10 to 50% by weight which covers the base metal.

3,580,740

ZINC ELECTRODE CONTAINING LEAD SULFIDE TO REDUCE GASSING AT THE ZINC ELECTRODE IN HEAT STERILIZED SILVER ZINC ALKALINE BATTERY

Herbert I. James, Levittown, Pa., assignor to ESB Incorporated

No Drawing. Filed Sept. 4, 1968, Ser. No. 758,653
Int. Cl. H01m *41/00*
U.S. Cl. 136—30 **6 Claims**

A zinc electrode containing a lead sulfide additive to reduce gassing at the zinc electrode which is used as the

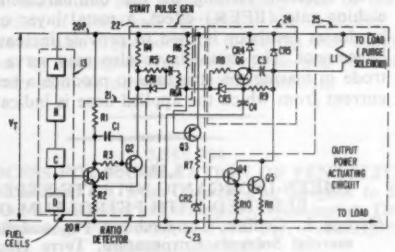
negative electrode in a heat sterilized silver-zinc alkaline battery. The lead sulfide effectively reduces gassing at the zinc electrode without adversely affecting the capacity of the heat sterilized battery, whereas the conventional mercuric oxide additive reduces the capacity of the heat sterilized battery. The lead sulfide additive may be used in amounts ranging from about 1 to about 10% by weight of the active material additive mixture.

3,580,741

UNIVERSAL AUTOMATIC SENSING AND ACTUATING CONTROL SYSTEM FOR FLUID CONSUMING POWER SOURCES AND THE LIKE

Thomas C. Hovious, Peabody, and Robert A. Torkildsen, Danvers, Mass., assignors to General Electric Company

Filed July 29, 1968, Ser. No. 748,469
Int. Cl. H01m 27/12
U.S. Cl. 136—86 **8 Claims**



A combined sensing and output power actuating control system for electrically operable devices such as electric power generation assemblies of the fluid consuming battery type, such as fuel batteries. The control system is comprised by a ratio detector circuit which is coupled, for example, across the output terminals of a fuel battery and also coupled across the last fuel cell unit in the fuel battery for comparing the ratio of the proportional voltage appearing across the last fuel cell to the output terminal voltage of the fuel battery to a preset value and deriving an output trigger signal in response to the ratio varying from the preset value. Timing circuit means are coupled to the output of the ratio detector circuit and are responsive to the output trigger signal from the ratio detector. An output power actuating circuit which is comprised by a purge valve actuator is energized for a predetermined time period by the timing circuit in response to the output from the ratio detector for purging the fuel battery of undesired accumulated inert gaseous matter thereby restoring the fuel battery to full operating capacity.

3,580,742

SEPARATOR-ELECTROLYTE CARRIER FOR PRIMARY CELLS

Viktor Arsenievich Naumenko, Novoslobodskaya ul. 62, kv. 64; Tatiana Nikolaevna Toroptseva, 3 Mytischinskaya ul. 14-a, kv. 109; Lidia Fedorovna Penkova, 3 Mytischinskaya ul. 14-a, kv. 124; Andrei Akimovich Vyselkov, Murmansky proezd 6, kv. 27; and Galina Ivanovna Rogova, Prospekt Mira 169, kv. 12, all of Moscow, U.S.S.R.

No Drawing. Filed Jan. 11, 1968, Ser. No. 697,001
Int. Cl. H01m 11/00
U.S. Cl. 136—155 **3 Claims**

A separator-electrolyte carrier for wet primary cells activated by water or electrolyte solutions, made of a cellulosic material impregnated by an aqueous solution, ensuring a rapid activation of the cells and increasing their service life; said separator can be used in all cases where the above properties are of importance, for instance, in cells for rescue operations.

3,580,743

THERMOELECTRIC MODULE WITH DIAGONAL CONSTRUCTION AND METHOD OF MANUFACTURING

Colin A. A. MacPhee, Beaurepaire, and Antonio C. P. Haene, Laval des Rapides, Quebec, Canada, assignors to Borg Warner Corporation, Chicago, Ill.

Filed Jan. 7, 1966, Ser. No. 519,363
Int. Cl. H01v 1/30
U.S. Cl. 136—212 **31 Claims**

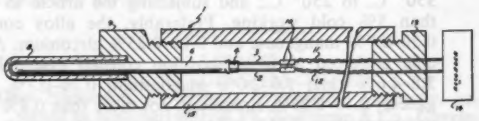
A thermoelectric module construction comprising a first row of blocks made of semi-conductive P-type material and a second row of blocks made of semi-conductive N-type material parallel to the first row, with the blocks in the first row located directly opposite those in the second row. One end of each block in the first row is joined by a conductor to a corresponding end of a block directly opposite in the second row. An opposite end of each block in the first row is joined by a conductor to a corresponding opposite end of a block diagonally opposite in the second row.

3,580,744

IMMERSION THERMOCOUPLE FOR ATMOSPHERIC AND VACUUM ENVIRONMENTS

Shingo Inouye, Kettering, and George Saul, Dayton, Ohio, assignors to the United States of America as represented by the Secretary of the United States Air Force

Filed Feb. 4, 1969, Ser. No. 796,356
Int. Cl. H01v 1/02
U.S. Cl. 136—234 **3 Claims**



A thermocouple assembly including a protection tube made of a tantalum alloy. The protection tube is of a length sufficient to encompass the thermocouple wires and is concentrically positioned inside of an outer tube made of quartz. Thus, the protection tube acts as a barrier and shields the thermocouple wires from the highly corrosive gases caused by metals acting on the quartz outer tube.

3,580,745

SEMICONDUCTOR DEVICE

Else Kooi and Aant Bouwe Daniel van der Meer, Emmasingel Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 27, 1966, Ser. No. 553,409
Claims priority, application Netherlands, June 5, 1965, 6507231
Int. Cl. H01l 7/34, 7/54
U.S. Cl. 148—1.5 **5 Claims**

A method of making different circuit elements integrated in a common semiconductive wafer by modifying the properties and composition of the oxide portions which cover the surface of the wafer over the elements. Various methods are described for obtaining different oxide properties, for example, providing a layer of silicon

monoxide over the usual silicon dioxide, or subjecting selected oxide coating portions to X-radiation or ultraviolet radiation.

3,580,746
PROCESS FOR THE MODIFICATION OF THE MECHANICAL CHARACTERISTICS OF CARBON STEEL WIRE
Isaac Behar, Bourg-en-Bresse, France, assignor to Trefileries & Cableries de Bourg et du Havre, Bourg-en-Bresse, Ain, France
Filed Sept. 29, 1967, Ser. No. 671,720
Claims priority, application France, Oct. 4, 1966, 78,740, 78,741
Int. Cl. C21d *9/52*
U.S. Cl. 148—12 **8 Claims**

The invention deals with a process for the modification of the mechanical characteristics of carbon steel wire, consisting of the following first patenting, then cold deforming, and finally deforming said wire at a temperature above the ambient temperature but below the recrystallization temperature of the steel in said wire, by applying transverse force to said wire.

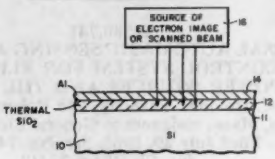
3,580,747
PRODUCTION OF ALUMINUM ZINC MAGNESIUM ALLOY ARTICLES
Fred Howitt, Collins Bay, Ontario, and Ian Taylor, Kingston, Ontario, Canada, assignors to Aluminium Laboratories Limited, Montreal, Quebec, Canada
No Drawing. Filed Nov. 17, 1967, Ser. No. 683,782
Int. Cl. C22f *1/04*
U.S. Cl. 148—12.7 **13 Claims**

In procedure for producing a solution heat treated aluminum-zinc-magnesium alloy article which is subjected to substantial cold working after solution heat treatment, but is nevertheless characterized by superior resistance to stress corrosion, the successive steps of heating the article to a solution-heat-treating temperature; cooling the article, at a rate maintained between 0.1° C./second and 20° C./second at least during cooling of the article from 350° C. to 250° C.; and subjecting the article to more than 5% cold working. Preferably, the alloy contains 0.20–0.7% manganese and 0.10–0.25% zirconium. A specific preferred alloy composition consists essentially of 3.8–4.6% zinc; 1.0–2.0% magnesium; 0.20–0.7% manganese; 0.10–0.25% zirconium; not more than 0.4% iron; not more than 0.25% silicon; other elements, not more than 0.03% each and not more than 0.10% total; balance aluminum.

3,580,748
WELDING FLUX COMPONENT
William T. Delong, Manchester Township, York County, Pa., assignor to The McKay Company, Pittsburgh, Pa.
No Drawing. Filed July 12, 1968, Ser. No. 744,317
Int. Cl. B23k *35/36*
U.S. Cl. 148—26 **24 Claims**

A welding flux component comprising a fused mixture consisting essentially of the following listed constituents in the specified weight percentages: about 40% to about 90% of at least one stabilizing compound selected from the group consisting of fluorides, silicofluorides and fluoaluminates and about 10% to 60% of basic oxide. The flux component may also contain acidic oxide and neutral oxide, the fused mixture having a base-to-acid mole ratio of at least 2 to 1. Preferred stabilizing compounds include manganese fluoride, aluminum fluoride, potassium silicofluoride, sodium silicofluoride, lithium silicofluoride, potassium fluoaluminate, sodium fluoaluminate and lithium fluoaluminate. Preferred welding flux components have a base-to-acid mole ratio of at least 3 to 1.

3,580,749
METHOD AND APPARATUS FOR SELECTIVE ETCHING OF INSULATING LAYERS
Alan J. Simon, Trafford, and Joseph E. Johnson and Terence W. O'Keeffe, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 13, 1968, Ser. No. 775,276
Int. Cl. H01l *7/00, 7/44*
U.S. Cl. 148—187 **11 Claims**



In selective etching by the bombardment enhanced etching rate (BEER) effect, a metal layer on the bombardment insulator is used to provide increased etch enhancement. The metal layer also may serve as an electrode in biasing the structure to produce a beam induced current from which the applied dose is indicated.

3,580,750
TMETN-INORGANIC NITRATE EXPLOSIVES BLENDED WITH PETROLEUM OIL
George L. Griffith, Coopersburg, Pa., assignor to Commercial Solvents Corporation, Terre Haute, Ind.
No Drawing. Filed Oct. 7, 1968, Ser. No. 765,615
Int. Cl. C06b *15/00*
U.S. Cl. 149—38 **18 Claims**

Explosive mixtures are provided, based on trimethylolethane trinitrate and an inorganic nitrate, in which the rate of detonation and, optionally, also sensitivity, are controlled by the use of petroleum oil in formulating the explosive.

3,580,751
TMETN-INORGANIC NITRATE EXPLOSIVES BLENDED WITH HOT INORGANIC NITRATE
George L. Griffith, Coopersburg, Pa., assignor to Commercial Solvents Corporation, Terre Haute, Ind.
No Drawing. Filed Oct. 7, 1968, Ser. No. 765,616
Int. Cl. C06b *19/02*
U.S. Cl. 149—38 **8 Claims**

Explosive mixtures are provided, based on trimethylolethane trinitrate and an inorganic nitrate, having a high rate of detonation and good sensitivity due to the use of hot inorganic nitrate in formulating the explosive.

A process also is provided for preparing such explosive mixtures, by mixing the inorganic nitrate with the trimethylolethane trinitrate at a temperature within the range from about 100° to about 150° F. The mixing can be carried out in the presence of a small amount of water to facilitate the blending and control rate of detonation without affecting sensitivity.

3,580,752
TMETN-INORGANIC NITRATE EXPLOSIVES BLENDED WITH WATER
George L. Griffith, Coopersburg, Pa., assignor to Commercial Solvents Corporation, Terre Haute, Ind.
No Drawing. Filed Oct. 7, 1968, Ser. No. 765,656
Int. Cl. C06b *15/00*
U.S. Cl. 149—38 **11 Claims**

Explosive mixtures are provided, based on trimethylolethane trinitrate and an inorganic nitrate, having a controlled rate of detonation and good sensitivity and explo

sive power, due to the presence of water in an amount of at least 1%.

A process also is provided for controlling the rate of detonation while retaining good sensitivity and explosive power of such explosive mixtures, by mixing the inorganic nitrate with the trimethylolethane trinitrate, optionally at a temperature within the range from about 100° to about 150° F. in the presence of water in an amount in excess of 1%.

3,580,753

TMETN-INORGANIC NITRATE EXPLOSIVES BLENDED WITH ALUMINUM

George L. Griffith, Coopersburg, Pa., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

No Drawing. Filed Oct. 7, 1968, Ser. No. 765,697
Int. Cl. C06b *9/00*
U.S. Cl. 149—39 **17 Claims**

Explosive mixtures are provided, based on trimethylolethane trinitrate and an inorganic nitrate, having a high rate of detonation and good sensitivity due to the incorporation of aluminum particles in the explosive.

A process also is provided for preparing such explosive mixtures, by mixing the inorganic nitrate and particulate aluminum with the trimethylolethane trinitrate.

3,580,754

PROCESS FOR PREPARATION OF PENTOLITE

Philip Barnhard IV, West Chester, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 1, 1969, Ser. No. 821,083
Int. Cl. C06b *3/00*
U.S. Cl. 149—93 **7 Claims**

Process for the preparation of stable pentolite from crude pentaerythritol tetranitrate comprising agitating in water a mixture of molten trinitrotoluene and crude pentaerythritol tetranitrate at a temperature above the melting point of the trinitrotoluene and below the melting point of the pentaerythritol tetranitrate, while maintaining the pH of the water in the range from 7 to about 10, followed by separating the pentolite from the aqueous phase.

3,580,755

NONFLAMMABLE, THIN, INTEGRALLY ILLUMINATED CONTROL PANEL OVERLAY

Thomas L. Kidd, Jr., Norristown, and Albert D. McClain, Jr., Philadelphia, Pa., assignors to General Electric Company

Filed Feb. 16, 1968, Ser. No. 706,044
Int. Cl. C23f *17/00*; B44c *1/22*
U.S. Cl. 156—3 **2 Claims**

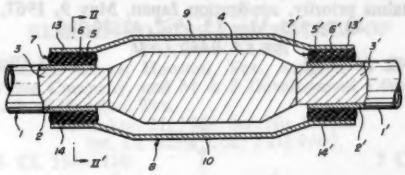
A nonflammable control panel overlay with legible indicia openings, integral illumination and integral supporting means comprises a metallic member with indicia openings on the front thereof backed by a nonflammable, transparent backing member mounted in a recessed area on the back of the member behind the indicia openings, an electroluminescent lamp mounted in a second recessed area behind the transparent backing member and ribs on the back side of the member comprising the unetched areas left when the various mounting recesses are formed. Such a metallic overlay is made by mechanically engraving the indicia, on the front of a metal blank and then chemically etching the rear of the blank, in a stepwise fashion to form the various recesses and remove unnecessary material, until breakthrough to the indicia occurs.

3,580,756

METHOD OF JOINTING SHEATHS OF ALUMINUM SHEATHED CABLES

Toshio Kashara, 1616 Ohmachi-7-chome, Kamakura-shi, Japan, and Mitsuru Numao, 10–101 Kudencho-Donchi, Nihon Jutaku Kodan, 740 Kudencho, Totsuka-ku, Yokohama-shi, Japan

Continuation of application Ser. No. 610,716, Jan. 20, 1967, now Patent No. 3,447,986. This application July 19, 1968, Ser. No. 746,017
Claims priority, application Japan, Jan. 31, 1962, 37/2,841
Int. Cl. H01r *5/00*
U.S. Cl. 156—49 **1 Claim**



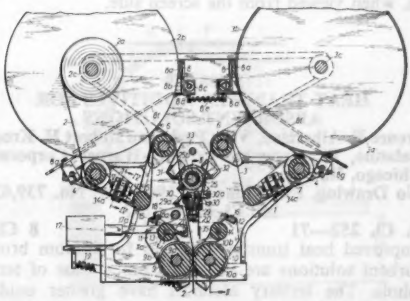
Method of jointing sheaths of cables in gas-tight and liquid-tight fashion wherein the end portions of the metal sheaths of the cables to be jointed are wrapped with composite layers of metal tape coated with a cold-setting synthetic resin, the sleeves of a junction box are positioned over the composite layers on each end of the cable, the sleeves are contracted into contact with the composite layers, and a protective layer is formed over the outer periphery of the sleeves and the outer surfaces of the cables over the sheaths.

3,580,757

WEB WINDING MACHINES

Otto Niepmann, Gevelsberg, Westphalia, Germany, assignor to Maschinenfabrik Fr. Niepmann & Co., Gevelsberg, Westphalia, Germany

Filed July 17, 1968, Ser. No. 745,660
Claims priority, application Germany, July 18, 1967, M 74,804
Int. Cl. B65h *19/08*
U.S. Cl. 156—504 **6 Claims**



An apparatus for connecting the rear end of a web of a nearly empty unwinding roll to a front end portion of

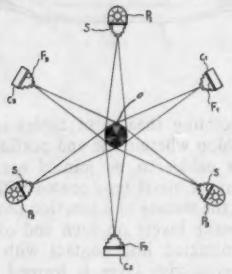
a web carrying an adhesive strip and pertaining to a new roll to be unwound, which includes two pressing rollers for receiving therebetween the unwinding end of the web from one roller and the forward end of the web of a new roller while a cutter is provided between the web rollers and the pressing rollers for alternate cooperation with the rear end portion of the nearly empty web roll to cut said rear end portion off after it has been pressed and glued to the front portion of the new web, electromagnetic control means controlled by the rear end of the unwinding web being provided for reducing the speed of the respective unwinding web pror to the cutting off operation of said cutter.

3,580,758

METHOD FOR REPRODUCING THREE-DIMENSIONAL IMAGE

Isao Morioka, 3–23 Ookagma 2-chome Meguro-ku, Tokyo, Japan

Filed May 8, 1968, Ser. No. 727,419
Claims priority, application Japan, May 9, 1967, 42/29,325; May 15, 1967, 42/30,706
Int. Cl. B44b *1/00*
U.S. Cl. 156—58 **3 Claims**



A method for reproducing a three-dimensional image comprising the steps of projecting on an object screens each consisting of a plurality of parallel lines as schematically shown in FIG. 6–*c*, photographing said object O having the shades in the form of curved lines formed thereupon by said projection so as to resolve the surface of said object into a multitude of curved lines, thereafter projecting thus obtained photographs and said screens at the same time upon a body of clay, and applying clay to or removing clay from said body in such a manner that said curved lines are concentrated or converged upon the surface of said body and are appearing there as straight lines, when viewed from the screen side.

3,580,759

HEAT TRANSFER ADDITIVES FOR ABSORBENT SOLUTIONS

Clarence E. Albertson, Villa Park, and Robert H. Krueger, Palatine, Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

No Drawing. Filed June 25, 1968, Ser. No. 739,629
Int. Cl. C09k *3/02*
U.S. Cl. 252—71 **8 Claims**

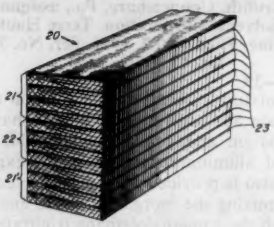
Improved heat transfer additives for lithium bromide absorbent solutions are selected from a class of tertiary alcohols. The tertiary alcohols have greater oxidative stability and, therefore, do not react as rapidly with the chromate corrosion inhibitors which are commonly used in the absorbent solutions. In all cases, the heat transfer improvement is at least as good as known, less stable, primary (and secondary) alcohols.

3,580,760

PROCESS OF MAKING LAMINATED WOOD PRODUCT UTILIZING MODULUS OF ELASTICITY MEASUREMENT

Peter Koch, Alexandria, La., assignor to the United States of America as represented by the Secretary of Agriculture

Continuation-in-part of application Ser. No. 429,175, Jan. 29, 1965. This application May 29, 1969, Ser. No. 829,103
Int. Cl. G01b *5/00*
U.S. Cl. 156—64 **3 Claims**



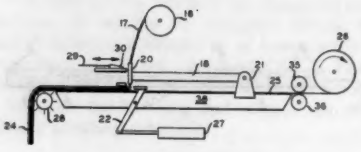
This invention relates to a process for producing laminated structures, and more specifically laminated beams, whereby the entire product of logs or bolts of wood is utilized, regardless of the presence of undesirable properties inherent in the lumber cut from said logs or bolts. Laminae are obtained from the logs by any convenient cutting method, dried to a low moisture content, relatively graded according to their deflection under a standard load at their center while supported near their end points, then arranged into a laminated structure with those laminae that have the greatest deflection in the center of the structure and those with progressively less deflection located away from the center such that the least deflective laminae are furthest from the center of the structure, and the laminae are then bonded by an adhesive.

3,580,761

METHOD OF FORMING NONWOVEN ARTICLES BY FUSING STRANDS TO A BASE

Harold D. Boultinghouse, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 2, 1966, Ser. No. 598,682
Int. Cl. D04h *11/00*
U.S. Cl. 156—72 **5 Claims**

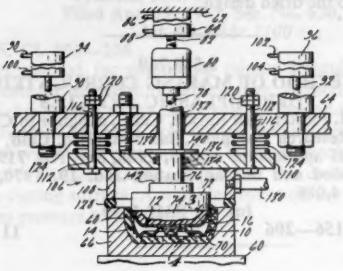


1. A method of bonding meltable material to a receptive base which comprises
   (a) passing at least one strand of said material through a hollow, tubular passage and through a restricted extremity thereof to project said material slightly beyond said extremity,
   (b) melting at least a portion of the projecting material,
   (c) contacting the thus melted material with said receptive base to bond said material to said base, and
   (d) separating the passage and base to draw said material through said passage.

3,580,762
METHOD OF MAKING DOUBLE-WALLED PLASTIC ARTICLES

Fred R. Zumstein, Detroit, Mich., assignor to King-Seeley Thermos Co., Ann Arbor, Mich.

Filed Jan. 23, 1969, Ser. No. 793,301
Int. Cl. B32b *31/00*; C09j
U.S. Cl. 156—73 4 Claims

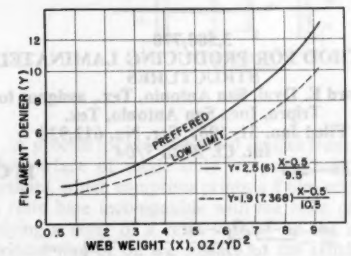


A method of making double-walled, heat insulating plastic tableware or other plastic articles of a type having radially spaced inner and outer sets of seating and mating surfaces fused together by a spin welding operation.

3,580,763
METHOD OF PRODUCING FIBER-REINFORCED FOAM PRODUCTS

Gaspard X. Criner, Cary, and William A. Blackburn, Chapel Hill, N.C., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 578,073, Sept. 8, 1966. This application Mar. 13, 1969, Ser. No. 820,033
Int. Cl. B32b *5/18*
U.S. Cl. 156—78 1 Claim



Flexible fiber-reinforced foam products, comprised of unitary cellular structure foam bodies, the foam bodies having a fiber content comprising a multiplicity of staple fibers randomly oriented in a multi-directional pattern and distributed with uniform randomness throughout the body, the fiber content per unit area being at least the amount determined with respect to the denier by the equation:

$$y=1.9(7.368)^{\frac{x-0.5}{10.5}}$$

where y=fiber denier and x=web weight in ounces per square yard, are produced by forming a nonwoven web consisting of randomly oriented fibers of controlled inter-fiber cohesion and porosity, dispensing a foamable mixture onto the web, and then compressing the foam-covered web.

3,580,764
MANUFACTURE OF BODIES FROM A BUNDLE OF BONDED RESIN TUBES

Fritz Gerlach, Weil am Rhein, Toni Hauskrecht, Haltingen, and Hermann Holch, Lorrach, Germany, assignors to Lonza-Werke GmbH, Weil am Rhein, Germany

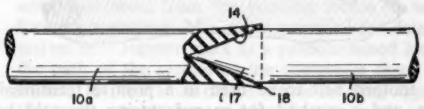
No Drawing. Filed July 5, 1967, Ser. No. 651,138
Claims priority, application Switzerland, July 5, 1966, 9,764/66
Int. Cl. B32b *31/14*
U.S. Cl. 156—83 6 Claims

Parallel substantially rigid resin tubes are assembled to a bundle in which the tubes are mechanically held together; the bundle is then subjected to a treatment which swells and softens the contacting surfaces of the tubes whereby the tubes are bonded together under the pressure developed by the swelling action. Finally, the bundle is dried under said pressure while the tubes are still mechanically held together, and then the bundle is removed as a coherent body from the holding means.

3,580,765
RESILIENT O-RING AND METHOD OF MANUFACTURE

Marvin H. Grove, Houston, Tex., assignor to M & J Valve Company, and M & J Development Company, both of Houston, Tex.

Filed Apr. 21, 1969, Ser. No. 817,651
Int. Cl. B29h *5/02*; F16j *9/00*
U.S. Cl. 156—110 3 Claims

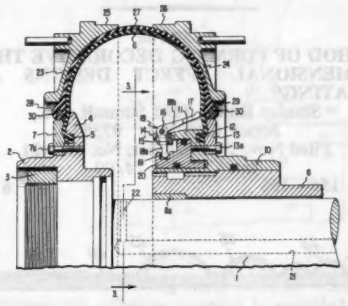


A resilient O-ring characterized by a particular type of junction between the ends of cured resilient stock. A conical cavity is formed in one end of the stock and a conical taper on the other end, the taper being on an included angle greater than that of the cavity. After applying cement the two parts are forced together with radial expansion at the junction. The junction is then trimmed away to the dimensions of the stock.

3,580,766
METHOD FOR MANUFACTURING PNEUMATIC TIRES

Antonio Pacciarini, Milan, and Renato Caretta, Gallarate, Italy, assignors to Pirelli S.p.A., Milan, Italy

Filed Mar. 13, 1968, Ser. No. 712,749
Claims priority, application Italy, Mar. 15, 1967, 13,715
Int. Cl. B29h *17/10*
U.S. Cl. 156—123 4 Claims



A method for the manufacture of pneumatic tires wherein the tire carcass is positioned on two annular supporting

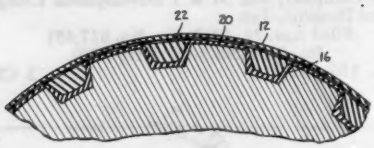
surfaces and freely shaped by mutually approaching the latter and by admitting compressed fluid inside the carcass. The shaped carcass is subjected to a slight axial compression from the portion of the carcass containing the bead cores to the proximity of its median plane by means of two rigid, equal and opposite surfaces having a toroidal profile axially narrower than that corresponding to the ideal shape of the freely shaped carcass, these surfaces being spaced from each other during the compression to define a space over the mid-circumferential portion of said carcass. The tire tread band may then be applied over the mid-circumferential portion of the carcass and between said surfaces.

3,580,767

METHOD OF MAKING A TOOTHED DRIVE BELT WITH AN ABRASION RESISTANT URETHANE COATING ON THE TRANSMISSION SURFACE

Gerald L. Barnes, Palatine, Ill., and Raymond G. Cichy, South Bend, and Gerald E. Adams, Mishawaka, Ind., assignors to Uniroyal, Inc., New York, N.Y.

Filed Mar. 28, 1969, Ser. No. 811,514
Int. Cl. F16g *1/00*; B29n *7/22*
U.S. Cl. 156—138 **7 Claims**



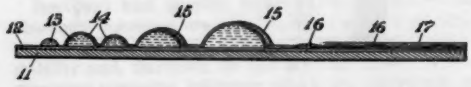
A toothed belt to be used in a positive transmission drive, and a method for manufacturing the said belt. According to the method, a grooved mandrel is coated with a skin coating of a wear and abrasion resistant elastomeric material. A highly viscous tooth filler compound, which is also an elastomeric material, is then applied filling the grooves of the mandrel and covering the entire surface of the skin coating forming the major portion of the belt teeth. Either before or after the filling of the grooves with the filler compound, and before the curing of the filler compound, a reinforcing filament is helically wound around the mandrel and at least partially embedded within the filler compound. Thereafter the mandrel and said coatings are placed in an oven and cured. The cured belt can then be stripped from the mandrel and may be cut into individual belts of smaller width if desired. The belt resulting from this method will have a wear and abrasion resistant elastomeric coating which covers a less wear resistant elastomeric layer. The reinforcing filament is separated from the teeth of the gears which coact with the belt by the wear and abrasion resistant coating.

3,580,768

METHOD OF FORMING DECORATIVE THREE DIMENSIONAL EFFECT DESIGNS AND COATINGS

Stanley Kukla, 1161 Summit Ave., Jersey City, N.J. 07307

Filed Nov. 29, 1967, Ser. No. 686,421
Int. Cl. B29c *24/00*
U.S. Cl. 156—156 **6 Claims**



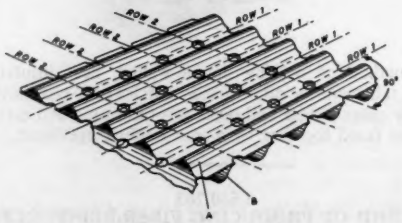
A method of forming decorative three dimensional effect designs and coatings on the smooth surface of a base material by painting the surface, applying drops of liquid or chips of frozen liquid to the painted surface while the paint is wet, drying the paint surrounding the drops or chips, spraying paint over the entire surface to cover the drops or chips, respraying the surface with paint of another color from an angle of zero to sixty degrees to the surface to create highlight and depth effects, removing the liquid entrapped under the paint film by rolling the surface, drying the painted surface, applying a protective coating to the dried design.

3,580,769

METHOD OF MAKING CORRUGATED THERMOPLASTIC ARTICLES

Phillip H. Parker, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Original application Apr. 5, 1968, Ser. No. 719,147. Divided and this application Jan. 19, 1970, Ser. No. 4,086
Int. Cl. B31f *1/22*
U.S. Cl. 156—206 **11 Claims**



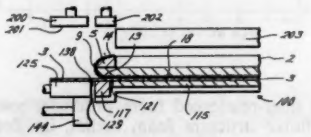
Corrugated thermoplastic articles are made by simultaneously perforating in closely spaced parallel rows at least two uniaxially oriented sheets of thermoplastic polymer in intimate contact at an angle of at least about 10° relative to orientation with heat to at least fusion temperature of the thermoplastic, cooling fused peripheries of the perforations and annealing the perforated films.

3,580,770

METHOD FOR PRODUCING LAMINATED STRUCTURES

Gilford E. Dyal, San Antonio, Tex., assignor to Tripro, Inc., San Antonio, Tex.

Filed Jan. 31, 1967, Ser. No. 612,938
Int. Cl. B32b *3/04*
U.S. Cl. 156—216 **14 Claims**



Postforming facing sheets such as the C-stage laminates are bonded to and around the returning peripheral edges of a planar polygonal core by a process involving heating only the peripheral outer portions of the sheet and bonding the outer portions of the sheet to the core with a heat activated adhesive while the main portion of the sheet is bonded to the core by a contact adhesive.

The apparatus for this method has a support surface surrounded by two sets of heating bars which heat only the outer portions of the sheet with the outer set of heating bars being movable relative to the core to wipe the sheet around the core after the sheet is heated to postforming temperature by the heater bars. The apparatus

has a lower mechanism comprising the support and heaters and an upper mechanism having elements which exert downward pressure to enable positioning heating and bending of the sheet to the core.

3,580,771

METHOD FOR RENDERING AN IRREGULAR SURFACE SMOOTH UTILIZING DIRECT CONTACT TRANSFER

Kent N. Maffitt, Minneapolis, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Apr. 13, 1967, Ser. No. 630,704
Int. Cl. B44c *1/00*
U.S. Cl. 156—235 **5 Claims**

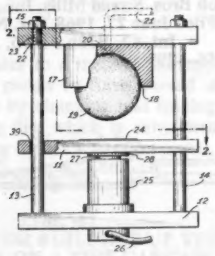
A method for smoothing minute irregularities in the surface of magnetic recording tape. A thermoplastic material is applied to the tape oxide surface and the tape then is disposed against a gold-coated flat casting surface while heat and pressure are applied. Thermal shock from applied liquid nitrogen causes release of the coated tape from the casting surface. A weighted roller on the apparatus applies pressure to the tape.

3,580,772

METHOD AND APPARATUS FOR THE TRANSFER OF IMAGES ONTO SURFACES OF HOLLOW ELASTOMERIC ARTICLES

Alfonso Vergara Ochoa, Tepeyac 1287, Guadalajara, Jalisco, Mexico

Filed May 16, 1967, Ser. No. 638,964
Claims priority, application Mexico, Feb. 6, 1967, 93,867
Int. Cl. B44c *5/00*
U.S. Cl. 156—240 **10 Claims**



A process for the transfer of images from a flat film onto the surface of moderately irregular hollow elastomeric articles, which comprises printing a film with an ink having a resin base incompatible with the resin of said film, applying a layer of a resin varnish on the surface of said printed film or on the surface of the article, said varnish having a resin base compatible with the base of said ink and with the resin of which said article has been formed, applying said film on the surface of said elastomeric article, inflating the article in order to extend and tighten the film on its surface, while the varnish is still on its mordant state, allowing the varnish to dry, and peeling off the film from the surface of said article whereby the printed image will be transferred unto the surface of said article.

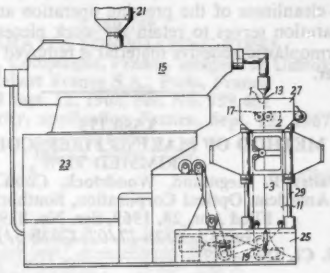
An apparatus for carrying out the above described process which comprises a hydraulic press with a flat movable lower platen to accommodate a printed film and a concave fixed upper platen with means for supporting an irregular hollow article, and means for displacing said lower platen to contact said film with the article supported by the upper platen whereby the film will be adhered thereto.

3,580,773

APPARATUS FOR MOULDING ARTICLES FROM PLASTICS MATERIAL

Jack Marvin Schneider, Kingswood, England, assignor to Calmec Extruform Limited

Filed Apr. 19, 1967, Ser. No. 631,959
Claims priority, application Great Britain, Apr. 22, 1966, 17,699/66
Int. Cl. B29f *3/00*
U.S. Cl. 156—244 **7 Claims**



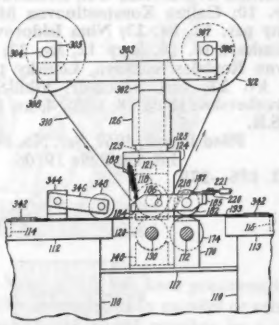
A composite sheet of thermoplastics material is formed by bonding together a first, extruding sheet and a second, preformed sheet of cheaper material. The second sheet has a series of identification marks printed thereon at locations spaced lengthwise of the sheet and a series of register marks. Articles are formed by feeding the composite sheet from the bonding means to an article-forming apparatus. Means are provided for detecting the arrival of a register mark at a predetermined location on the path of the second or the composite sheet and controlling the operation of the article-forming apparatus so that each article bears an identification mark at a predetermined location thereon.

3,580,774

METHOD FOR COATING WORK PIECES WITH THERMOPLASTIC MATERIAL

Terence J. L. Clarke, Leicester, England, Ivor Evans, deceased, late of Leicester, England, by Josie V. Evans, administratrix, Cossington, England, assignors to United Shoe Machinery Corporation, Flemington, N.J.

Filed Sept. 6, 1967, Ser. No. 667,323
Claims priority, application Great Britain, Sept. 9, 1966, 40,366/66; Dec. 9, 1966, 55,212/66; Feb. 14, 1967, 6,894/67
Int. Cl. B23b *31/12*
U.S. Cl. 156—247 **3 Claims**



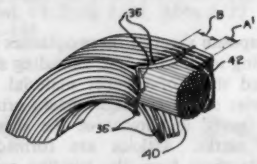
A method of coating sheet material work pieces with thermoplastic adhesive material is provided by the present invention. According to the method, work pieces are

assembled between a layer of thermoplastic adhesive material and a layer of stripper material suitably newsprint, and the assembly is subjected to heat and pressure. The coated work pieces and the stripper layer are separated while the thermoplastic adhesive is in heat softened condition, the stripper material retaining surplus adhesive material. Suitably, the layer of thermoplastic adhesive material is a film, preferably supported on a layer of release material, suitably silicone paper, which enhances the cleanliness of the pressing operation and which upon separation serves to retain the work pieces while surplus thermoplastic adhesive material is removed on the stripper layer.

3,580,775
METHOD OF MAKING FIBERSCOPES WITH TRIMMED TIPS

Walter P. Siegmund, Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Filed Apr. 28, 1969, Ser. No. 819,791
Int. Cl. B32b *17/02*; G02b *5/16*
U.S. Cl. 156—247 **5 Claims**

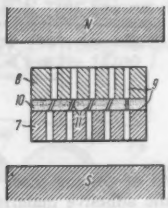


Fiberscopes formed of a multiplicity of accurately superimposed circular fiber ribbons. A portion of the length of each ribbon is coated in one zone with a material of high glass-bonding strength and with a strip of an adhesive parting agent at each side of the high strength bonding material. The coated portions are accurately superimposed and cured at an elevated temperature to produce a high strength bond centrally of the coated portions through which a cut is made to form opposite ends of the fiberscope. These ends are cut, ground, sawed or core drilled partially into adjoining areas of the adhesive parting agent to provide the fiberscope with tips of a desired shape and size whereupon trimming of the remaining length of the fiberscope to a corresponding shape and size is effected by delamination.

3,580,776
METHOD OF PRODUCING ELECTRIC CONTACT BETWEEN TWO CEMENTED PARTS

Leonid Zalmanovich Shenfil, 1 Cherkivovskaya yl. 60, kv. 3; Valentin Evgenievich Gul, Zelenodolskaya 33, korp. 1, kv. 10; Galina Konstantinovna Melnikova, 1 Basmanny per. 12, kv. 23; Nina Isidorovna Siprikova, B. Zjuzinskaya ul. 10, korp 12, kv. 22; Malya Konstantinovna Rozhdestvenskaya, Lenisky prosp. 101, korp. 179, kv. 22; and Alexandr Nikitichna Kuzina, N. Khoroskevskoe shoss 18, korp. 4, kv. 8, all of Moscow, U.S.S.R.

Filed June 9, 1967, Ser. No. 645,038
Int. Cl. B29c *19/06*
U.S. Cl. 156—275 **7 Claims**



A method is provided for producing an electric contact by means of a current-conducting cement constituted as a hardening epoxy resin containing a current-conducting ferrogmagnetic filler. The cement film is hardened in a non-uniform magnetic field having a variable intensity across the field section, and initially a pulsating magnetic field is applied having a frequency of 0.1 to 1000 c.p.s. when the static component of magnetic induction has a value of 50 to 15,000 gausses and when the amplitude is within the range of 10 to 5000 gausses.

3,580,777
METHOD OF BONDING ASBESTOS SHEET MATERIAL TO CONCRETE

Rowland S. Hartzell, Gibsonia, Pa., and Gene Gerek, Oswego, Ill., assignors to PPG Industries, Inc., Pittsburgh, Pa.

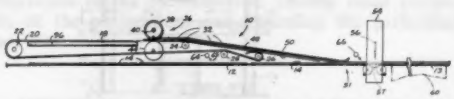
No Drawing. Continuation-in-part of application Ser. No. 528,347, Feb. 18, 1966. This application Dec. 2, 1968, Ser. No. 780,587
Int. Cl. B23b *31/00*
U.S. Cl. 156—278 **8 Claims**

Composite coated concrete articles having a surface coating of a cured or other resinous material comprise a cementitious base and adherently bonded thereto a layer of asbestos sheet material which is coated with an organic coating. Such articles can be obtained by curing the cementitious base while in contact with the uncoated side of pre-coated asbestos sheet material to produce concrete articles in which the coated asbestos sheet material is directly bonded to the concrete with exceptional adhesion.

3,580,778
METHOD AND APPARATUS FOR PLYWOOD PANEL LAY-UP

Charles L. Larson, Grants Pass, Oreg., assignor to Jeddeloh Bros. Sweed Mills, Inc., Gold Hill, Oreg.

Filed June 27, 1968, Ser. No. 740,676
Int. Cl. B32b *31/06, 31/12*
U.S. Cl. 156—299 **9 Claims**



Apparatus and method for laying up plywood panels. Included in the apparatus is a veneer conveyer for carrying a series of presized veneer sheets in one direction, and a core conveyer spaced above the veneer conveyer for carrying core pieces in the same direction. The core conveyer converges on the veneer conveyer to place core pieces on the veneer sheets at a placement station. Supply means upstream from the placement station deposits a charge of multiple core pieces on the core conveyer, with the grain of the core pieces extending transversely of the core conveyer. Glue sprayers are supported above the veneer conveyer, with one upstream of the placement station and another downstream of the placement station. And these apply glue to the upper faces of the veneer sheets and the upper faces of the core pieces, respectively.

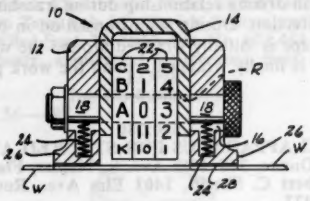
3,580,779
HAND OPERATED TOOL FOR MARKING WIRE

Fred G. Schriever and Sigmund Cheslin, both of 16333 Harper Ave., Detroit, Mich. 48224

Filed Oct. 21, 1966, Ser. No. 588,534
Int. Cl. B32b; B41m
U.S. Cl. 156—384 **4 Claims**

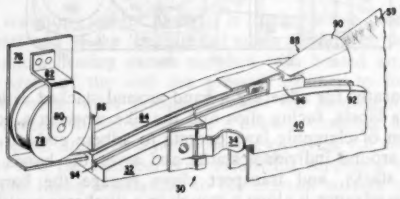
This invention is directed to a portable hand tool used for on the job identification of wire, wherein adhesive tape is printed with selected indicia by the operator and

dispensed at the will of the operator for manual or automatic application to the wire at the desired locations, or



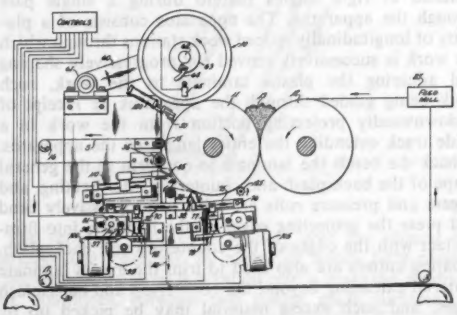
the indcia can be applied directly to the wire or other cylindrical object.

3,580,780
METHOD AND APPARATUS FOR BAR SEALING OF GIRDLE PANELS
Herbert G. Klawunn, Millington, and John Addison Herr, Garwood, N.J., assignors to The Singer Company, New York, N.Y.
Filed May 7, 1969, Ser. No. 822,627
Int. Cl. B29c *27/04*
U.S. Cl. 156—380 **7 Claims**



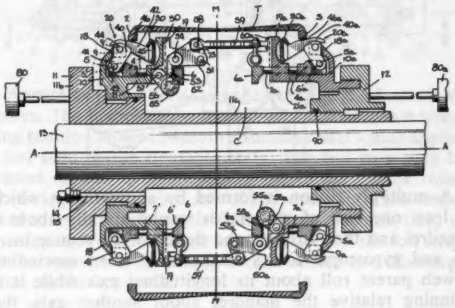
This disclosure relates to a method and apparatus for bar sealing of girdle panels to form curved side seams, initially held in place by clamping and folding the same over a curved sealing die, which is subsequently mated with a second die along the seam to effect a seal, thermally or dielectrically.

3,580,781
APPARATUS FOR BUILDING UP TREAD MATERIAL ON A TIRE CARCASS
Jack Lyndon Hollis, Pottstown, Pa., and Ray Douglas Shockey, Uniontown, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Continuation of abandoned application Ser. No. 316,287, Oct. 15, 1963. This application May 20, 1968, Ser. No. 740,795
Int. Cl. B29h *17/20*
U.S. Cl. 156—397 **4 Claims**



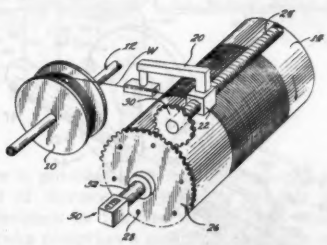
A tire carcass supported in rotating contact with a roll picks up rubber tread material from the roll to build up the desired contour of tread material on the carcass. Cutters on the roll separate a sheet of tread material into a plurality of ribbons, at least one of which is removed from the roll before the roll contacts the tire carcass. The cutters are positioned to vary their spacing and thus change the ribbon widths. By removing the center strip, tread material in the shoulder areas can be built up as desired.

3,580,782
APPARATUS FOR SHAPING TIRES
Jean Leblond, Compiegne, France, assignor to Uniroyal Englebert France S.A., Paris, France
Filed Sept. 12, 1968, Ser. No. 759,401
Claims priority, application France, Sept. 15, 1967, 121,259
Int. Cl. B29h *17/26*
U.S. Cl. 156—415 **35 Claims**



A tire building machine comprising a pair of variably spaced carcass support rings coaxially disposed with respect to each other and providing for direct inflation of a first stage carcass supported thereon. At least one of the rings includes an expandible and contractible elastic band for sealingly engaging the respective bead of the carcass.

3,580,783
METHOD OF PRODUCING MULTITUDINOUS STRAIGHT CUT-TO-LENGTH FILAMENTS IN ORIENTED FORM
Ardelle Glaze, Fort Wayne, Ind., assignor to Fort Wayne Metals, Inc.
Filed Jan. 4, 1968, Ser. No. 695,633
Int. Cl. B31c *11/02*
U.S. Cl. 156—426 **1 Claim**



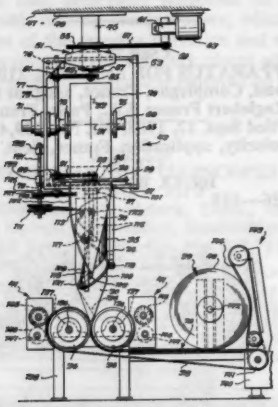
Small diameter wire which has been prestressed is arranged in a plurality of substantially parallel or otherwise oriented strands which are bound together by a readily removable adhesive and thereafter cut to desired size. The adhesive binding the individual, cut strands together may or may not be removed to provide either a plurality of prearranged strands of wire bound together into nonwoven cloth or a mass of individual strands oriented in parallel or other relationship.

3,580,784

APPARATUS FOR MAKING A BIAS LAID RIBBON

Charles A. Lee and Warren R. Furbeck, Knoxville, Tenn., assignors to International Paper Company, New York, N.Y.

Filed Apr. 9, 1968, Ser. No. 719,986
Int. Cl. B65h *81/02*
U.S. Cl. 156—429 13 Claims



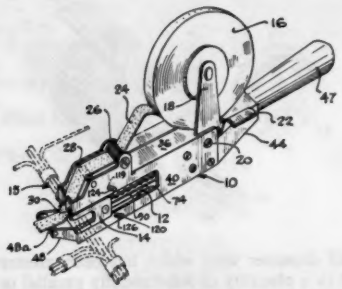
A multi-ply ribbon is formed by apparatus in which at least one web of material is wound spirally about a mandrel and then stripped and flattened. To reduce inertia and gyroscopic forces encountered when unwinding a web parent roll about its longitudinal axis while it is spinning relative the mandrel about another axis, the parent roll is mounted in a rotatable carrier at one end of the mandrel with the respective axes being substantially coplanar. The mandrel may be suspended from the carrier and driven in a direction reverse to that of the carrier so that the mandrel remains stationary relative to nip rolls. The preferred ribbon is formed of bias laid, superimposed plies of creped tissue and has the surfaces of the ribbon textured by spaced depressions at which fibers in one ply are interlocked with fibers in an adjacent ply.

3,580,785

TAPE WRAPPING APPARATUS WITH TRAVELING WHEEL GEAR

Peter Mihalkanin, 1224 Maple Ave., Berwyn, Ill. 60402

Filed Sept. 3, 1968, Ser. No. 756,896
Int. Cl. B65b; B65c *3/02*
U.S. Cl. 156—468 16 Claims



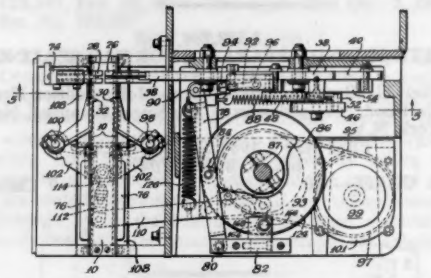
A taping apparatus particularly adapted to operate as a portable hand unit for peripherally wrapping a work piece with flexible adhesive tape. A split wheel gear is rotatable in a uniform rotational direction between elongated rack gears. The wheel gear is translated in a first direction in driving engagement with one rack while the other rack is displaced longitudinally and away from the first rack. The wheel gear continues its uniform rotation by disengaging from the first rack and engaging the other rack in driving relationship during translation in the opposite direction. During such translation in both directions, the tape is initially wrapped around the work piece, is cut, and is finally wrapped around the work piece.

3,580,786

BANDING APPARATUS FOR STACKED ARTICLES

James E. Doane, 340 13th Ave. S., Naples, Fla. 33940, and Robert C. Sheriff, 1401 Elm Ave., Round Lake, Ill. 60073

Filed June 30, 1967, Ser. No. 650,296
Int. Cl. B65b *13/06*; B65c *1/04*
U.S. Cl. 156—475 10 Claims



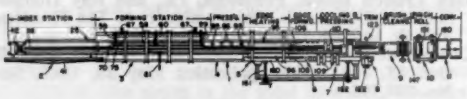
Apparatus for adhering a band around stacked articles such as labels, facing slips and the like wherein a combination of clampnig jaws operate to adhere ends of the bands around individual stacks and sever the bands between stacks, and transport claws engage the banded stack to advance it along a trough to a discharge position. Heating elements are provided for the clamping jaws and the sides of the trough if the bands are of heat-seal type.

3,580,787

PLASTIC LAMINATING APPARATUS

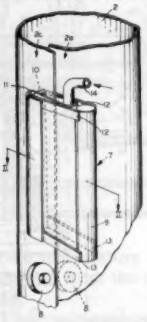
George W. Loy, Scio, Ohio, assignor to Scio Cabinet Company, Inc., Scio, Ohio

Filed Dec. 15, 1969, Ser. No. 885,014
Int. Cl. B32b *31/26*
U.S. Cl. 156—477 22 Claims



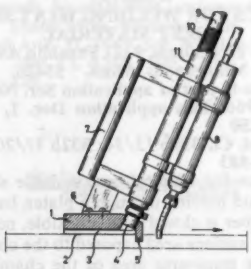
A plastic laminating apparatus for laminating plastic sheet material to a countertop core having a backsplash attached at right angles thereto during a single pass through the apparatus. The apparatus consists of a plurality of longitudinally spaced work stations through which the work is successively moved for progressively shaping and adhering the plastic laminate to the work, such work being guided through the apparatus by receipt of a downwardly projecting portion from the work in a guide track extending the entire length of the apparatus. A back die bends the laminate to conform to the general shape of the backsplash and countertop after heating, and fingers and pressure rolls are used to progressively bend and press the projecting edges of the laminate into firm-contact with the edges of the countertop and backsplash. Floating cutters are also used to trim the excess laminate material extending beyond the countertop and backsplash edges, and such excess material may be picked up by a suction blower or removed by a rotary brush prior to passage through final pressure rolls.

3,580,788
APPARATUS FOR FORMING A TUBE FROM A TRAVELLING WEB
Ake Gustafson, Chatel-Saint-Denis, Switzerland, assignor to Tetra Pak AG, Zurich, Switzerland
Filed Sept. 28, 1967, Ser. No. 671,451
Claims priority, application Switzerland, Sept. 28, 1966, 13,998
Int. Cl. B32b *31/00*
U.S. Cl. 156—497 1 Claim



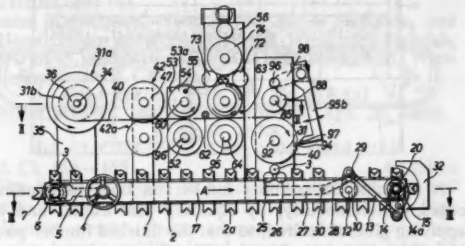
A travelling web of material is formed into a tube with at least one of the longitudinal edges of the web passing through a heating means supplied with heated air. The two edges of the web are pressed together to form a welded seam after passing through the heating means. The heating means comprises a heating chamber having an internal lining of a non-adhering material. An air pipe opens into the chamber with means for supplying heated air. The lining is attached to the exterior surface of the heating chamber and is passed around the air pipe and has a vertical slit-shaped opening through which one edge of the travelling web can project into the interior of the heating chamber.

3,580,789
WELDING GEAR FOR OBJECTS OF THERMOPLASTIC MATERIAL
Günter Wenzel, Kelkheim, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
Filed July 9, 1968, Ser. No. 743,487
Claims priority, application Germany, July 25, 1967, F 53,049
Int. Cl. B32b *31/30*
U.S. Cl. 156—497 5 Claims



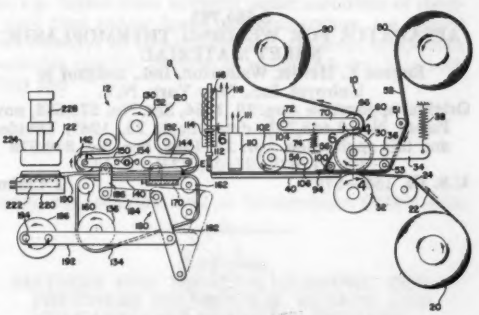
The spout or shoe of a welding gear for objects of thermoplastic materials, by means of which fully plasticized welding material is brought into a prepared welding gap, comprises, between two lateral guide surfaces, a smoothing face, a connection for the supply of the welding material and at its leading end a nose projecting into the welding gap.

3,580,790
APPARATUS FOR THE AUTOMATIC WRAPPING OF ROTATABLE BODIES
Heinz Pollmeier, Rosrath, Bezirk Cologne, and Johann Witthuhn, Furstendamm, Germany, assignors to Klebetechnik GmbH, Dusseldorf, Germany
Filed Apr. 23, 1969, Ser. No. 818,738
Claims priority, application Germany, May 6, 1968, P 17 60 342.8
Int. Cl. B65c *3/16, 9/04*
U.S. Cl. 156—521 12 Claims



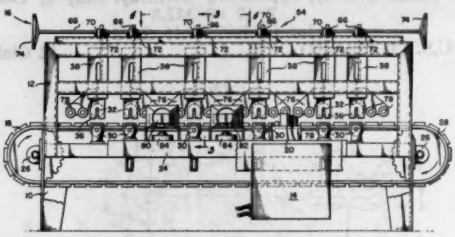
Apparatus for the automatic wrapping of rotatable bodies. The bodies are supported and moved into a wrapping position located beneath a suction roller which applies a foil strip to the rotatable body. The foil strip may be printed on and is automatically fed to the suction roller by various roller pairs. All of the operations are correlated so as to intermittently feed a single rotatable body to a wrapping work station simultaneously with the foil strip. The wrapped rotatable body is then carried to a discharge point on the apparatus.

3,580,791
DEVICE FOR APPLYING A BAND OF THERMOSETTING MATERIAL ONTO A LABEL AND FOR SEALING THE LABEL ONTO AN ARTICLE
Grant H. Jordan, Parma, Ohio, assignor to American Greetings Corporation, Cleveland, Ohio
Filed June 19, 1968, Ser. No. 738,173
Int. Cl. C32b *31/00*
U.S. Cl. 156—540 20 Claims



There is provided a device for producing a label with a band of thermosetting material on one side thereof for subsequent heat sealing of said label onto an article. This device comprises a means for moving a strip of label stock and an adhesive strip having a thermosetting layer and a backing strip along a feedline with the thermosetting layer adhered to said strip of label stock. A parting member pulls the backing strip from the adhesive strip while a stripper member prevents the backing strip from pulling the thermosetting layer from the label stock, and a cutting means cuts the label stock into separate labels. There is provided a further device for then heat sealing the label onto a package formed from thin plastic film material.

3,580,792
LUMBER AND VENEER JOINTER
Andrew M. Kvalheim, 823–825 Petaluma Blvd. S., Petaluma, Calif. 94952, and Bob L. McEvers, 7300 SW. Child Road, P.O. Box 28, Tualatin, Oreg. 97062
Filed May 23, 1968, Ser. No. 731,525
Int. Cl. B32b *31/12;* **B29c** *19/00;* **B27d** *3/00*
U.S. Cl. 156—546 **15 Claims**

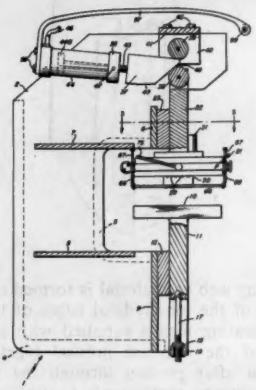


A machine for jointing lumber on both longitudinal edges, simultaneously, by squaring said edges, and by applying glue, if desired, so that the finished lumber piece is ready for joining with other like pieces to form a panel. Either veneer or lumber strips may be prepared by the machine. The machine comprises a tubular frame assembly, an endless chain conveyor assembly for passing lumber to be treated through the machine, series of top and bottom hold-down rollers for guiding the lumber through the machine, and a pair of cutter assemblies for simultaneously finishing the longitudinal edges, each said cutter assembly being incrementally movable inwardly and outwardly with respect to the long axis of the machine by means of a positioning set works assembly, remotely controlled. The machine also includes a pair of glue applicators for applying glue to the finished lumber edges, and a top, hold-down roller assembly, each hold-down roller being individually actuable to a hold-down position, or, alternatively, the entire bank of rollers may be simultaneously actuable to a hold-down position. A vertical adjustment assembly is provided for setting each roller in a pre-determined hold-down position; the adjustment mechanism sets all top rollers simultaneously.

3,580,793
APPARATUS FOR WELDING THERMOPLASTIC SHEET MATERIAL
Eugene E. Hewitt, Walkerton, Ind., assignor to Uniroyal, Inc., New York, N.Y.
Original application Aug. 19, 1966, Ser. No. 573,688, now Patent No. 3,468,732, dated Sept. 23, 1969. Divided and this application Apr. 21, 1969, Ser. No. 840,570
Int. Cl. B29c *27/08;* **B23b** *31/10*
U.S. Cl. 156—579 **3 Claims**

Apparatus for welding thermoplastic sheet material including conical shaped thermoplastic buttons spun welded to join mating edges of two thermoplastic sheets and a friction driver mountable in a hand drill for spinning buttons.

3,580,794
STAMPING PRESS WITH LINEARLY APPLIED FORCE
Leonard A. Mintz, 27 Kettering Road, Norwood, Mass. 02062
Filed Oct. 7, 1968, Ser. No. 765,557
Int. Cl. B30b *1/40, 15/20;* **B32b** *31/20*
U.S. Cl. 156—581 **6 Claims**

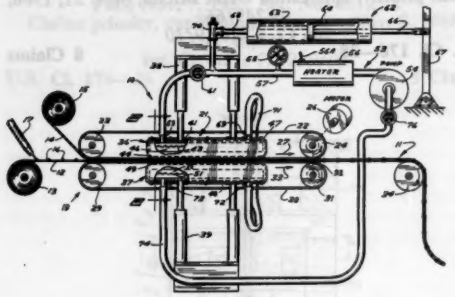


A stamping press having an air cylinder which transfers its force to a stamping head by means of a wedge forced by the air cylinder between a reaction roller and a ram driving the stamping head. During the approach stroke, one planar face of the wedge is at a substantial angle to the axis of the piston of said air cylinder, but during the pressure stroke another planar face of the wedge is disposed at a very small angle to the piston and it exerts its pressure substantially solely along the axis of travel of the stamping ram. The press also has a hand lever to rotate the air cylinder and wedge about an axis to permit hand operation of the ram. When used for roll leaf stamping a linear thrust drive is coupled to the roll leaf to advance it in the same direction upon both directions of motion of said thrust drive.

3,580,795
APPARATUS FOR WELDING HEAT SEALABLE SHEET MATERIAL
John E. Eichenlaub, 9321 Franklin Ave. W., Minneapolis, Minn. 55426
Continuation-in-part of application Ser. No. 584,564, Oct. 5, 1966. This application Dec. 1, 1969, Ser. No. 881,250
Int. Cl. B30b *15/34;* **B32b** *31/20*
U.S. Cl. 156—583 **24 Claims**

An apparatus for welding heat sealable sheet material with heated fluid moving through a platen having a chamber. The chamber is closed with a flexible, nonelastic, thin cover having a surface area exposed to the chamber that is larger than the transverse area of the chamber, whereby the cover is moved by the pressure of the fluid in the chamber without elongating or deforming the cover to transmit force and heat to a surface of the sheet material. The cover is urged toward the sheet material by the heated fluid under pressure which transmits both heat and pressure to the sheet material to weld the material. The platen may be provided with fluid in a vapor phase to provide the platen

with totally uniform pressure on the cover which adjusts to the irregularities on the surface opposing the cover. The vapor also maintains, through condensation of the



vapor, a uniform surface temperature on the cover. The condensed liquid is returned from the chamber back to a vapor generating source.

3,580,796

GLASS LAMINATED BY AN ADHESIVE COMPRISING THE POLYURETHANE RESULTING FROM THE REACTION OF BIS(2-ISOCYANATOETHYL) FUMARATE WITH POLYOLS WITHOUT OTHER ISOCYANATE

Robert M. Hick, Jr., Springfield, and Joseph C. Gould, Norwood, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington Del.

No Drawing. Filed Mar. 16, 1967, Ser. No. 623,566
Int. Cl. B32b *17/10, 27/40*
U.S. Cl. 161—190 **7 Claims**

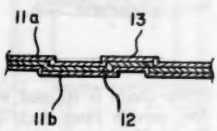
A composite article is prepared by (a) providing a liquid polyurethane by reacting bis (2-isocyanatoethyl) fumarate with a polymeric polyol component which preferably comprises a triol obtained from propylene oxide and 1,2,6-hexanetriol, and (b) using said polyurethane to coat a layer of glass or acrylic plastic or to bond said layer (e.g., a windshield) to another layer of solid material (e.g., an auto body) with a cured bond which is highly resistant to adhesive failure when the article is exposed to sunlight and outdoor weather for extended periods of time.

3,580,797

TABLE COVER

James E. Asmuth, Neenah, Wis., assignor to Wisconsin Tissue Mills, Menasha, Wis.

Filed Aug. 22, 1969, Ser. No. 852,390
Int. Cl. B32b *1/00, 3/02*
U.S. Cl. 161—126 **4 Claims**



A table cover comprising at least one ply of thin cellulosic tissue and an additional ply of thin polyethylene film which is superimposed in an edge aligned relation with the first ply. The plies are secured in a laminated relation by embossing in areas of substantial width extending along the marginal edges to form a border for the table cover and to completely surround a central area which is substantially free of embossing. The border forming embossed marginal areas are of substantially uniform width and extend inwardly along the opposite side edges of the table cover from the original untrimmed marginal side edges.

3,580,798

BIAXIALLY STRETCHED TRIOXANE COPOLYMER FILM AND PROCESS FOR THE PREPARATION THEREOF

Gunter Kegelmann, Neustadt an der Weinstrasse, and Horst Gebler and Walter Seifried, Wiesbaden-Biebrich, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Apr. 23, 1969, Ser. No. 818,531
Claims priority, application Germany, Apr. 26, 1968, P 17 69 257.8
Int. Cl. C08f *15/12;* **C08g** *1/04;* **D01d** *5/12*
U.S. Cl. 161—165 **4 Claims**

The invention relates to a biaxially stretched film and process for the preparation thereof, the film being a high molecular weight linear trioxane/ethylene oxide copolymer having stabilized end groups and containing 80 to 99.9 percent by weight of trioxane based on the total weight of the polymer, the film exhibiting a sag of less than 0.2 percent characteristic for a flat film, a deviation in thickness of less than ±6 percent from the average thickness, an elastic modulus in all directions of the film plane of at least 300 kg./mm.², an ultimate tensile strength above 15 kg./mm.² at an elongation at rupture of less than 100 percent, and a shrinkage capacity, at 140° C., of less than 5 percent.

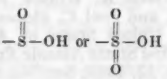
3,580,799

LAMINATED PRODUCTS

Heinz Uelzmann, Cuyahoga Falls, and David C. Hidinger, Akron, Ohio, assignors to The General Tire & Rubber Company

No Drawing. Original application Sept. 28, 1967, Ser. No. 671,187, now Patent No. 3,502,618. Divided and this application Nov. 26, 1969, Ser. No. 870,530
Int. Cl. B32b *15/08, 27/38;* **C08g** *30/14*
U.S. Cl. 161—186 **9 Claims**

Epoxy resin adhesives with improved adhesive properties, e.g., higher shear strengths under conditions of shorter cure time and/or lower cure temperature, are formed from mixtures of epoxy resins and aziridinyl compounds containing catalytic amounts of compounds that have both >NH and



groups, e.g., sulfamic acid or formamidine sulfinic acid.

3,580,800

METHOD FOR BONDING OLEFINIC TERPOLYMERS TO NATURAL RUBBER AND VULCANIZATES OBTAINED THEREBY

Luigi Torti and Guido Bertelli, Ferrara, Italy, assignors to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed June 26, 1967, Ser. No. 649,039
Claims priority, application Italy, June 28, 1966, 14,823/66
Int. Cl. C09j *3/12*
U.S. Cl. 161—243 **4 Claims**

Process for bonding (1) vulcanizable composition comprising low-unsaturation ethylene/higher alpha-olefin/unconjugated diolefin terpolymer, a vulcanizing agent therefor and carbon black with (2) vulcanizable composition comprising natural rubber, a vulcanizing agent therefor and carbon black, this process comprising interposing between layers of composiitons (1) and (2) a layer of (3) vulcanizable composition comprising a brominated co-

polymer of isobutene with about 0.5–5% by weight of isoprene, a vulcanizing agent therefor and carbon black, the carbon black in composition (3) having a lower activity than the carbon black in layers (1) and (2), contacting the three layers under pressure, and then heating at a temperature of 130–210° C. to thereby covulcanize the three layers and obtain a high degree of adhesion therebetween.

3,580,801

METHOD FOR MANUFACTURING NONWOVEN FIBROUS PRODUCTS FROM GEL FIBERS

Thomas C. Spence, Yorktown, Va., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Division of application Ser. No. 567,846, July 26, 1966, now Patent No. 3,436,304, which is a continuation-in-part of applications Ser. No. 457,139, and Ser. No. 457,178, both May 19, 1965. This application July 25, 1968, Ser. No. 747,457

The portion of the term of the patent subsequent to Apr. 1, 1986, has been disclaimed and dedicated to the Public

Int. Cl. D21f *11/00*; D21h *5/12*

U.S. Cl. 162—157 **8 Claims**

A process for preparing a dry, nonwoven fibrous sheet, comprising:

(a) forming a web of self-bonding gel fibers of thermoplastic, fiber-forming polymer of acrylonitrile, said gel fibers having a gel network structure that has never been completely collapsed by drying and that consists essentially of interconnecting capillary spaces intimately intertwined with fibrillar structure of polymeric material;

(b) subjecting said web to drying conditions between two spaced barriers which limit the physical movement of said web in its thickness direction while providing substantailly no restraint to movement in the other two directions; and

(c) recovering a dry, nonwoven fibrous sheet.

The product is useful as a textile fabric in the preparation of a variety of materials ranging from hard, boardy sheets to soft, fluffy fabrics to stretchable, tough fabrics.

3,580,802

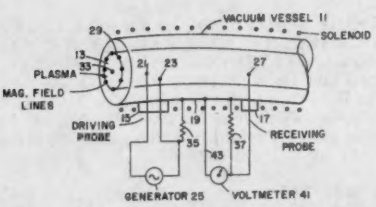
DEVICE FOR DETERMINING THE SHAPE OF MAGNETIC SURFACES IN TOROIDAL CONFIGURATIONS CONTAINING PLASMA

John L. Johnson, Niels K. Winsor, John M. Dawson, Rolf M. Sinclair, and Joel C. Hosea, Princeton, N.J., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Apr. 22, 1969, Ser. No. 818,374

Int. Cl. G21b *1/00*

U.S. Cl. 176—1 **5 Claims**



Method of surveying the shape and location of magnetic surfaces in a stellarator with an electrostatic acoustic oscillation mode that dominates ordinary sound waves associated with plasma particle motion along the magnetic surfaces.

3,580,803

NUCLEAR REACTORS

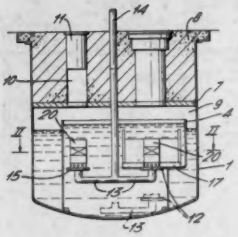
Ivor Everson, Wantage, and Maurice William George, Swerford, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Sept. 18, 1967, Ser. No. 668,393

Claims priority, application Great Britain, Sept. 21, 1966, 42,249/66

Int. Cl. G21c *19/10*

U.S. Cl. 176—28 **8 Claims**



A nuclear reactor comprising a plurality of nuclear fuel elements grouped to form a core assembly within a reactor vessel and means are provided to transfer the said core assembly between its reactor operating station and a second non-operating station within the said vessel.

3,580,804

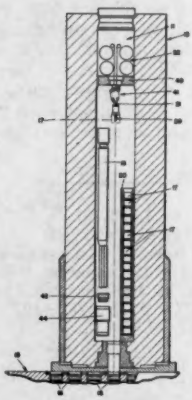
LIFTING MECHANISM AND REFUELING MACHINE

John A. Paget, Imperial Beach, Calif., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 7, 1969, Ser. No. 805,156

Int. Cl. G21c *19/20*

U.S. Cl. 176—30 **11 Claims**



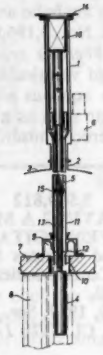
A composite lifting chain is formed with an interior, protected space for service lines such as electrical or pneumatic lines. To facilitate compact storage and winding of the composite chain, as within a limited storage space in a nuclear fuel handling machine, the composite chain is separated into first and second chains or portions which are wound on separate reeling mechanisms. Within the fuel handling machine, the composite chain may be bent and offset laterally by a chain displacement mechanism to align a grapple connected to its lower end with nuclear core elements or other devices stored therein.

3,580,805

SAFETY DEVICE FOR NUCLEAR REACTORS WITH MEANS FOR PREVENTING CONTROL ROD EJECTION

Karlheinz Handel, Bruchsal, Germany, assignor to Gesellschaft fur Keinforschung m.b.H.

Filed Nov. 7, 1967, Ser. No. 681,202
Claims priority, application Germany, Nov. 8, 1966, G 48,394
Int. Cl. G21c *7/12, 9/00*
U.S. Cl. 176—36 5 Claims



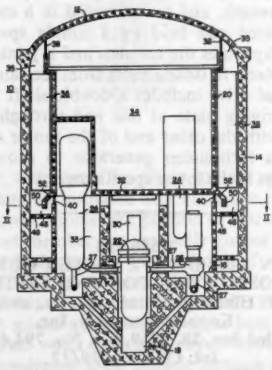
A safety device for nuclear reactors, wherein the reactor comprises a housing or containment surrounding a core having moveable control rods therein and a pressure tube extending from the housing in which the control rod and the control rod movement mechanisms are contained or to which they are attached. A safety locking device is provided within the housing proximate to the core which comprises pawl means proximate to mating-engagement means extending from the control rod, wherein the pawl is held away from the extended engagement means under tension. In the event that the pressure tube is forced away from the reactor, the means holding the pawl away from the extended engagement means is removed, whereby permitting the pawl to engage the engagement means and prevent the ejection from the core of the control rod.

3,580,806

PRESSURE SUPPRESSING ARRANGEMENT

Sterling J. Weems, Chevy Chase, and I. Harry Mandil, University Park, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 5, 1968, Ser. No. 719,054
Int. Cl. G21c *13/00*
U.S. Cl. 176—37 5 Claims



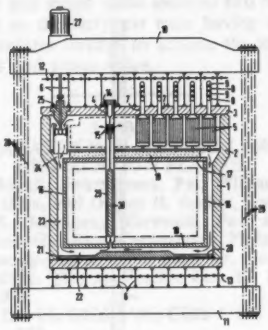
A nuclear steam generating plant is disclosed which is enclosed within a containment structure which employs the melting of a solid material such as ice for pressure suppression and heat absorption purposes. An annular diffuser section is situated beneath an annular solid material containing compartment to prohibit excess coolant escaping from the reactor after an accident from overloading and channeling through vertical sections of the meltable solid. The diffuser section comprises a plurality of liquid traps which act as valves, i.e., each trap fills with liquid and is essentially sealed after a rated load of escaping coolant has melted a portion of the vertical section of solid material above it to ensure the exposure of other sections of solid material to the escaping coolant.

3,580,807

STEAM GENERATING ASSEMBLY FOR USE IN THE INTERIOR OF A PRESSURE VESSEL OF A PRESSURIZED WATER NUCLEAR REACTOR

Hermann Kumpf, Dusseldorf, Eller, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 13, 1968, Ser. No. 736,709
Claims priority, application Germany, June 14, 1967, S 110,308
Int. Cl. G21c *15/00*
U.S. Cl. 176—55 4 Claims



Steam generating assembly for use within a pressure vessel of a pressurized water reactor includes primary fluid channels extending vertically through and above the reactor core and formed thereabove with lateral outlets. Heat exchanger modules suspended from the top of the pressure vessel above the core and between the channels comprise an upper and a lower collection chamber and straight secondary fluid conveying elements connected therebetween and having heat transfer surfaces directly exposed to the interior of the pressure vessel for engagement by a flow of heated primary fluid in a substantially horizontal direction from the lateral outlets of the primary fluid channels.

3,580,808

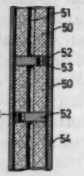
NUCLEAR REACTOR FUEL ELEMENT WITH NONALIGNED CHANNELING

Enar Lofroth, Roslags-Nasby, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden

Filed Feb. 26, 1968, Ser. No. 708,308
Int. Cl. G21c *3/30*
U.S. Cl. 176—74 1 Claim

A known type of a nuclear reactor contains vertical fuel elements in which a vertical channel is provided in the fissile fuel. It has been found that small particles or

drops of fissile fuel collects on the bottom of said vertical channel. The inconvenience resulting from said collection of fissile fuel can be reduced if the vertical channel is divided into a plurality of shorter sections.



3,580,809
NUCLEAR REACTOR FUEL ELEMENT WITH SPACED REDUCTIONS OF DIAMETER
Albert Etheridge Williams, Poulton, and William Simpson Linkison, Blackpool, England, assignors to United Kingdom Atomic Energy Authority, London, England
Filed Mar. 28, 1968, Ser. No. 716,725
Claims priority, application Great Britain, Apr. 12, 1967, 16,875/67
Int. Cl. G21c *3/04*
U.S. Cl. 176—76 4 Claims

A fuel pin for a fuel element for a fast breeder nuclear reactor has diameter reductions to bring about a reduction in the cross-sectional area of fissile fuel in register with these diameter reductions, so reducing the heat rating of the volumes of fissile fuel in register with the diameter reductions and reducing the tendency of such volumes to melt in the event of a temperature excursion of the reactor. The resulting barriers to re-orientation of fuel by melting are advantageous. The application of the invention to vibrocompacted fuel and to a combination of vibrocompacted and pelleted fuel is described.

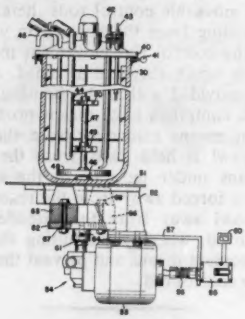
3,580,810
FERMENTATIVE PRODUCTION OF L-THREONINE
Isamu Shiio, Kamakura-shi, and Shigeru Nakamori and Kounosuke Sano, Kawasaki-shi, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
No Drawing. Filed July 26, 1968, Ser. No. 747,828
Claims priority, application Japan, July 28, 1967, 42/48,568
Int. Cl. C12b *1/00*
U.S. Cl. 195—29 4 Claims

Certain mutants of *Escherichia coli* which require isoleucine for growth and can grow in the presence of more than 1 mg./l. α-amino-β-hydroxy-valeric acid in an otherwise conventional culture medium produce L-threonine in amounts of several grams per liter of the medium.

3,580,811
SYNTHETIC FERMENTATION MEDIUM AND PROCESS USING SAME FOR CULTIVATING *GIBBERELLA ZEAE*
Phil Hildy, Terre Haute, Ind., assignor to Commercial Solvents Corporation
No Drawing. Continuation-in-part of application Ser. No. 670,455, Sept. 25, 1967. This application Apr. 16, 1968, Ser. No. 721,606
Int. Cl. C12b *3/02*; C12d *13/00*
U.S. Cl. 195—100 21 Claims

A synthetic fermentation medium, particularly for use in the production of an anabolic and estrogenic substance identified in U.S. Pat. No. 3,196,019, by cultivation of the microorganism *Gibberella zeae* (Gordon). The medium includes exfoliated vermiculite as a support for the microorganism and an aqueous nutrient production medium containing a sugar such as glucose as the carbohydrate source for the microorganism.

3,580,812
FERMENTER HAVING A MAGNETICALLY DRIVEN AGITATOR
Charles E. Bender and Douglas S. Fraser, New Paltz, N.Y., assignors to Cenco Medical/Health Supply Corporation, Chicago, Ill.
Filed Oct. 19, 1967, Ser. No. 676,419
Int. Cl. C12b *1/00*
U.S. Cl. 195—143 4 Claims

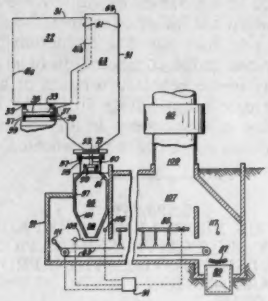


A magnetic drive arrangement for fermenters wherein the sample or culture agitated must be maintained free of contamination. The magnetic drive includes a driven plate and a driving plate. The magnets on the driven plate are polygonally arranged with like poles adjacent to maximize field strength, and are mounted in a cup-shaped receptacle, located and held by a simple spacer plate. A cover plate captivates the magnets and is joined to the cup-shaped receptacle to isolate them from the sample agitated. The rotational drive includes a double shaft motor which drives the driving plate at one end through a reduction gear drive, with the other end of the motor shaft directly coupled to a tachometer generator to provide accurate speed readings in the lower speed ranges.

3,580,813
CONDITION RESPONSIVE WATER QUENCH IN A CLOSED COKE COOLING SYSTEM
Basil W. Hinchliffe, Pittsburgh, Pa., assignor to Koppers Company, Inc.
Filed Jan. 28, 1969, Ser. No. 794,485
Int. Cl. C10b *39/12*
U.S. Cl. 201—39 11 Claims

Incandescent coke is received from a coke oven through a closed coke guide into a closed hopper car; the car

travels to a closed cooling unit where the coke is dumped. In the closed unit, the coke is charged at a predetermined rate onto a conveyor which travels at a set speed. The coke on the conveyor passes through



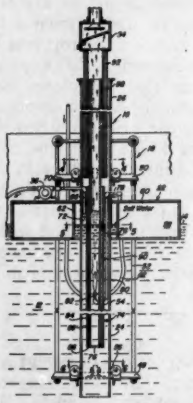
water sprays which direct water at a determined flow rate on to the coke to cool the coke to a predetermined temperature. Subsequently, the quenched coke is conveyed away for further processing.

3,580,814

FLOATING, SEA WATER DISTILLATION APPARATUS USING A RECIRCULATING, DIRECTLY CONTACTING FLUENT HEATING MEDIUM

Harry S. Green, R.R. 1, Box 22A, Wilmington, Ill. 60481

Filed Mar. 14, 1969, Ser. No. 807,253
Int. Cl. B01d *3/00*
U.S. Cl. 202—234 **6 Claims**



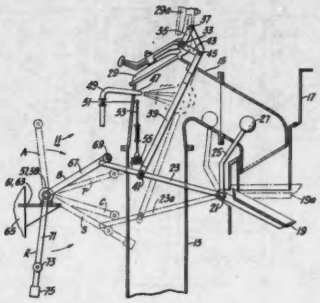
Sea water, evaporated by direct contact with heated oil discharged into an insulated heat exchange tube, mounted within the lower submerged portion of a steam stack carried by a float member for vertically guided movement in response to tidal changes in the level of the sea water relative to a stationary frame. The oil rises to the top of the water within the heat exchange tube for withdrawal by a suction intake after transfer of its heat to the water. The evaporated water rises as a vapor through the steam stack to a condenser after passing through a steam trap. A pump connected to the suction intake recirculates the oil through a heater.

3,580,815

APPARATUS FOR SIMULTANEOUSLY ACTUATING STANDPIPE LID, DAMPER VALVE AND STEAM VALVE

Linwood G. Tucker, Pittsburgh, Pa., assignor to Koppers Company

Filed Jan. 30, 1969, Ser. No. 795,185
Int. Cl. C10b *27/06*
U.S. Cl. 202—258 **5 Claims**



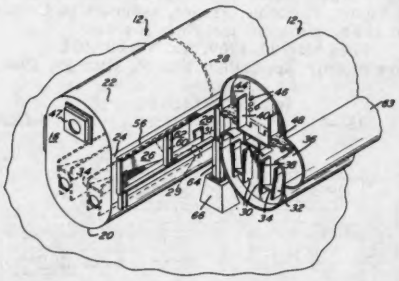
Mechanism to actuate simultaneously a standpipe lid, damper valve and steam valve includes two rotary actuators mounted to the larry car each having an arm that engages and rotates linkage to actuate the standpipe lid, damper valve and steam valve.

3,580,816

APPARATUS FOR MAKING LARGE DISTILLATION PLANTS

Robert A. Tidball, Swarthmore, Pa., William M. King, Massillon, Ohio, and Dewey R. Bosley, Boothwyn, and Charles M. Jennings, Norwood, Pa., assignors to Baldwin-Lima-Hamilton Corporation, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 554,453, June 1, 1966. This application Oct. 17, 1969, Ser. No. 868,978
Int. Cl. B01d *3/06;* **C02b** *1/06*
U.S. Cl. 202—173 **3 Claims**



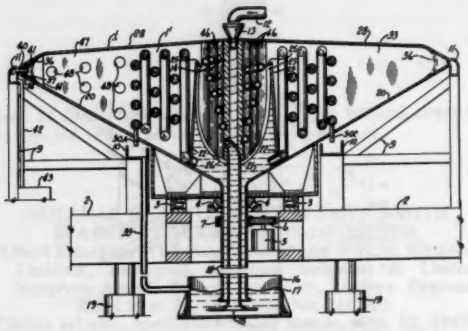
The shell of a multi-stage distilling plant, wherein preassembled sections, each containing a like series of evaporation stages, have mating openings in their respective side walls providing vapor communication between corresponding stages of sections. Peripheral edges of the openings in the sections and abutting edges of internal partitions and reinforcing members of the sections serve as joints. The joined sections provide a single large multistage plant. The method includes steps of fabricating the sections, aligning the fabricated sections, and welding the sections together to form a single large plant.

3,580,817

METHOD AND APPARATUS FOR THE CENTRIFUGAL DISTILLATION OF A LIQUID

Nicholas Joseph Schnur, 704 St. Agnes Lane, West Mifflin, Pa. 15122

Filed Feb. 25, 1969, Ser. No. 802,152
Int. Cl. B01d 3/10
U.S. Cl. 203—11 12 Claims



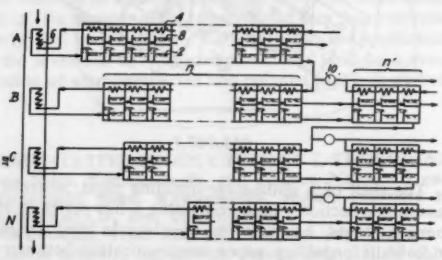
Centrifugal distillation of a liquid in a rotary sealed container maintained at a pressure substantially equal to the vapor pressure of the liquid to withdraw and cool the molecular vapor and centrifugally force it to the periphery barrier of the chamber by acceleration due to the centrifugal speed of the chamber and creating sufficient pressure on the molecular vapor to condense the same into the distilled liquid. The barrier retains the distilled liquid until a sufficient entrapped quantity is enabled to be discharged from the chamber as an additional quantity of the liquid is distilled thereby maintaining a continuous self-contained process while adding liquid by the relative pressure differential between the chamber and atmospheric pressure.

3,580,818

SEA WATER MULTISTAGE DISTILLATION PROCESS WITH COMMON REHEATING MEANS

Rocco Catoggio de Villiers, Brooklyn Pretoria, Transvaal, Republic of South Africa, and Loic Blachez, Paris, Francois Jegou, Bourg-la-Reine, and Jean Huyghe and Paul Vignet, Grenoble, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 11, 1969, Ser. No. 806,078
Claims priority, application France, Mar. 18, 1968, 144,284
Int. Cl. B01d 3/06
U.S. Cl. 203—11 5 Claims



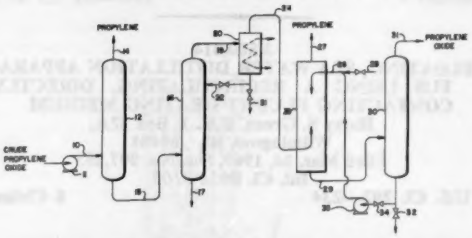
A method and installation for the distillation of a solution to be treated in a plurality of lines. In each line, the solution is reheated in the liquid state, then caused to expand in a series of stages at progressively decreasing pressures consisting of stages for recovery at higher pressure and stages for heat rejection at lower pressure, and the vapor produced at each stage is caused to condense. Condensation is produced at least in the recovery stages by exchange with the feed solution as this latter is circulated from one stage to the next prior to reheating and in counterflow to the reheated solution. The feed solution of each line consists of the non-vaporized brine of the preceding line as completed by a make-up quantity of fresh solution. Reheating is carried out either at temperatures which decrease progressively from one line to the next as a function of the increase in the concentration of a salt having reverse solubility in the reheated solution or at temperatures which increase progressively from one line to the next as a function of the increase in the concentration of a salt having normal solubility in the reheated solution.

3,580,819

RECOVERY OF PROPYLENE AND PROPYLENE OXIDE BY SELECTIVE SEPARATION WITH PLURAL STAGE DISTILLATION, PROPYLENE OXIDE ABSORPTION AND SUBSEQUENT DISTILLATION

Sadok E. Hoory, El Cerrito, Stanley F. Newman, San Francisco, and Robert E. Vincent, Lafayette, Calif., assignors to Shell Oil Company, New York, N.Y.

Filed Apr. 21, 1969, Ser. No. 817,721
Int. Cl. B01d 3/34; C07c
U.S. Cl. 203—42 4 Claims



Propylene oxide and propylene are separately recovered, in a high state of purity, from a crude propylene oxide, produced by reaction of propylene with an organic hydroperoxide, and containing the propylene oxide in admixture with unconverted propylene, water and higher boiling oxygen-containing organic impurities, by subjecting the crude propylene oxide to a two stage distillation, in the first stage of which propylene is taken overhead under controlled conditions resulting in the wilfull retention of a substantial amount of the propylene in the distillation bottoms and in the second stage of which propylene oxide is taken overhead in admixture with propylene, and separating propylene oxide from the second stage distillation overhead by selective absorption in an aqueous solvent.

3,580,820

PALLADIUM-NICKEL ALLOY PLATING BATH

Katsumi Yamamura, Suwa-shi, Tsugumitsu Miyasaka, Suwa-gun, Nagano-ken, Shinichi Hayashi, Tokyo, Masao Yamamoto, Koshigaya-shi, and Yukio Matsubara, Tokyo, Japan, assignors to Kabushiki Kaisha Suwa Seikosha and Nisshin Kasai Kabushiki Kaisha

No Drawing. Filed Jan. 4, 1968, Ser. No. 695,576
Claims priority, application Japan, Jan. 11, 1967, 42/1,868
Int. Cl. C23b 5/32, 5/46
U.S. Cl. 204—43 5 Claims

A palladium-nickel alloy plating bath is formed of a solution of palladium salt and a nickel salt in ammonia and a brightener in the nature of a sulfonate or a sulfonamide is added to the bath in which a metal is plated for approximately 30 minutes at a pH in the range of 7.5, temperature in the range of 30° C., and cathode current density in the range of 1 a./dm.^{2} without agitation.

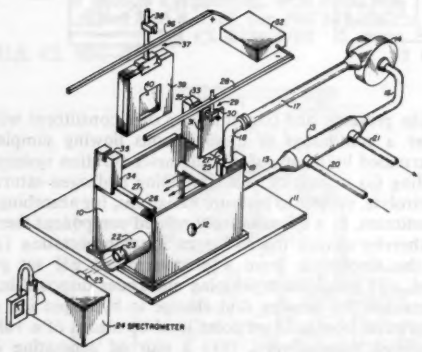
3,580,821
BRIGHT SILVER ELECTROPLATING
Hans-Gunther Todt and Wolfgang Dahms, Berlin, Germany, assignors to Schering A.G., Berlin, Germany
No Drawing. Filed June 24, 1969, Ser. No. 838,040
Claims priority, application Germany, June 27, 1968, P 17 71 699.3
Int. Cl. C23b *5/26, 5/46*
U.S. Cl. 204—46 **5 Claims**

Fully bright silver electrodeposits are obtained from otherwise conventional cyanide-type silver plating electrolytes in the presence of small amounts of acids of the formula

R—CX—NR'—NH—CS—SH

and of their soluble salts, in the formula R being lower alkoxy or NHR''; R'' being hydrogen, lower alkyl, phenyl, halophenyl, lower alkyl phenyl, or lower alkoxy phenyl; R' being hydrogen or lower alkyl; and X being oxygen, sulfur, or imino, but R being different from amino when X is sulfur.

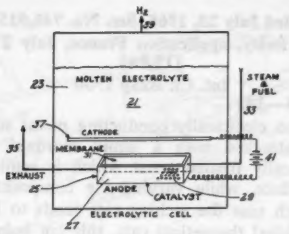
3,580,822
METHOD FOR PRODUCING A CHROMIUM ACTIVATED ALUMINUM OXIDE SCINTILLATOR
Robert W. Allison, Jr., Richmond, Robert W. Brokloff, Vallejo, and John R. Woodyard, Berkeley, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed July 7, 1969, Ser. No. 839,510
Int. Cl. C23b *9/02*
U.S. Cl. 204—58 **7 Claims**



A radiation resistant chromium activated aluminum oxide scintillator produced by immersing an aluminum anode and lead cathode in an anodic bath and gradually increasing an applied potential until bright flashes or "anodic scintillation" occurs whereby Cr ions from the solution are injected into the Al_2O_3 base lattice. The scintillators produced by this process may be readily utilized to visually aid in the control and transport of high intensity beams without radiation damage thereto.

3,580,823
HYDROGEN PRODUCTION
Harold Shalit, Drexel Hill, Pa., assignor to Atlantic Richfield Company, Philadelphia, Pa.
Filed Mar. 17, 1969, Ser. No. 807,864
Int. Cl. B01k *1/00*
U.S. Cl. 204—60 **7 Claims**

An improved process and apparatus for the production of hydrogen of high purity whereby a carbonaceous fuel is reformed to produce hydrogen and said hydrogen is recovered economically from said reforming operation through the use of an electrolytic process using chemical



energy of the reforming process to reduce electrical energy needed and in a molten electrolyte environment.

3,580,824
IMPREGNATED GRAPHITE
John E. Currey, Morris P. Grotheer, and Edward H. Cook, Jr., Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Filed Dec. 31, 1968, Ser. No. 789,008
Int. Cl. B01k *1/00;* **C01b** *11/26*
U.S. Cl. 204—95 **11 Claims**

Graphite impregnated with iron in an amount between about 0.05 to about 3 percent by weight affords an excellent electrode material for the electrolysis of alkali metal halides. Electrode over voltage is decreased and electrode life is prolonged by iron deposition in comparison to conventional graphite electrodes.

3,580,825
ELECTROLYTIC PROCESS FOR PURIFYING IRON DISSOLVED FROM SCRAP STEEL
Stanley Hills, Cherry Hill, N.J., assignor to ESB Incorporated
No Drawing. Filed Oct. 28, 1968, Ser. No. 771,319
Int. Cl. C22d *1/24*
U.S. Cl. 204—112 **4 Claims**

Iron sufficiently free of manganese impurities to be useful as active material in electrochemical cells is obtained in a continuous process by dissolving scrap steel containing an unacceptably high manganese content and subsequently plating out the iron but not much of the manganese. The pH of the electrolytic bath is maintained so the H_2 evolution will occur after iron deposition but before manganese deposition. The preferred conditions for the electrolytic bath are: a pH range from about 2.5 to about 3.0; a current density range from about 0.1 to about 0.25 amp/sq. in.; a ferrous ion concentration range from about 25 to about 40 gr./l.; and a supporting electrolyte concentration range from about ½ to about 1 mole/1.

3,580,826
ELECTROLYTIC DECOLORING OF FERTILIZER SOLUTIONS
Donald L. Whitfill, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
No Drawing. Filed Feb. 24, 1969, Ser. No. 801,829
Int. Cl. B01k *1/00*
U.S. Cl. 204—131 **8 Claims**

Oxidizable impurities in fertilizer solutions are removed by addition of a soluble chloride followed by in situ electrochemical generation of chlorine.

3,580,827

ETCHING METHOD AND APPARATUS

Jean-Paul Lannegrace, Neuilly-sur-Seine, France, assignor to Imprimerie Chaix-Desfosses-Neorgravure, Paris, France

Filed July 23, 1968, Ser. No. 746,915
Claims priority, application France, July 27, 1967, 115,993
Int. Cl. B23p 1/00
U.S. Cl. 204—143 2 Claims

To etch an electrically conducting metal surface, this surface is attacked with a liquid mordant through a photographically treated resist which is semi-permeable to the mordant, while varying the composition of the mordant such that the etching rate tends to lag slightly behind the ideal theoretical rate, this lag being compensated by applying to the surface a positive electrical potential with respect to the mordant.

3,580,828

ELECTRODEPOSITION OF LITHIUM

Thomas Bradley Reddy, Pound Ridge, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Dec. 16, 1968, Ser. No. 784,202
Int. Cl. C23b 5/00
U.S. Cl. 204—14 9 Claims

Cohesive, dense deposits of lithium having a specular appearance are obtained by electrodeposition from anhydrous electrolyte of lithium salt in organic solvent. Electrolyte concentration is 0.05 to 0.20 mole lithium salt per liter and current density is 0.05 to 0.25 milliampere per square centimeter.

3,580,829

PROCESS FOR IRRADIATING POLYVINYLIDENE FLUORIDE AND A COMPATIBLE POLYFUNCTIONAL MONOMER AND PRODUCT THEREOF

Vincent L. Lanza, Atherton, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

No Drawing. Continuation-in-part of applications Ser. No. 257,763, Feb. 11, 1963, and Ser. No. 403,328, Oct. 12, 1964. This application Mar. 1, 1968, Ser. No. 709,804
Int. Cl. C08d 1/00; C08f 15/00, 19/00
U.S. Cl. 204—159.17 24 Claims

A composition comprising polyvinylidene fluoride and a compatible polyfunctional monomer may be treated with low doses of irradiation to provide a crosslinked polyvinylidene fluoride having excellent strength properties, resistance to heat aging and the property of elastic memory.

3,580,830

PREPARATION OF XANTHATE TERMINATED POLYMERS

Alan R. Siebert, Maple Heights, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Sept. 5, 1968, Ser. No. 757,785
Int. Cl. C08d 1/00; C08f 1/16
U.S. Cl. 204—159.24 2 Claims

Xanthate terminated polyesters are known intermediates in the preparation of mercaptan terminated olefin polymers and copolymers. An improved process for the preparation of these intermediates involves the reaction of olefin monomer(s) with a xanthogen disulfide in the presence of a particular range of high energy radiation. The disulfide acts both as a source of free radicals and also as a polymerization modifier.

3,580,831

PHOTOCHLORINATION OF MONO- AND DI-CHLOROETHANE

Michael J. Mintz, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Jan. 13, 1969, Ser. No. 790,848
Int. Cl. B01j 1/10; C07c 17/00
U.S. Cl. 204—163 4 Claims

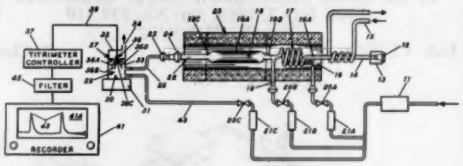
In the process for preparing compounds of the formula CH_3CCl_2X, wherein X is H or Cl, said process comprising reacting by contacting in the liquid phase, at a temperature of 0 to 50° C. in the presence of actinic light, a compound of the formula CH_3CHClX, wherein X is H or Cl, with Cl_2, the improvement of carrying out said reaction in the presence of a catalytic amount of I_2.

3,580,832

ELECTROLYTIC COULOMETER TITRATION SYSTEM

David R. Rhodes, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 13, 1968, Ser. No. 705,179
Int. Cl. G01n 27/44
U.S. Cl. 204—195 2 Claims



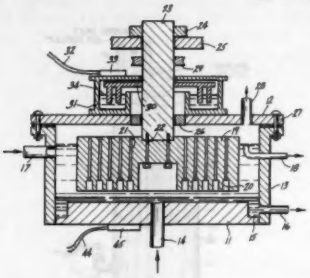
The presence and concentration of a constituent within either a continuous or discontinuous flowing sample, is determined by means of a coulometer titration system including (i) a titration cell containing hydrogen saturated electrolyte, subject to pressure variations, for absorbing the constituent, or a quantitatively related component thereof, to thereby change the hydrogen ion concentration (pH) of the electrolyte from a predetermined pH set point level, (ii) potential developing electrodes disposed in the electrolyte for sensing said change in hydrogen ion concentration from said set point level by means of a voltage produced therebetween, (iii) a pair of generating electrodes for electrolytically producing, in the electrolyte, in response to said voltage just enough of a component reactable with the constituent being analyzed for, or component thereof, to neutralize the constituent or component thereof, to return said hydrogen ion concentration to its predetermined set point level, and (iv) recording means maintaining a continuous record of the component reactable with the said constituent, or component thereof, so as to indicate the presence and concentration thereof within the titration cell. The present invention contemplates the use of first and second potential electrodes including an improved hydrogen-dissolved-in-palladium sensing electrode adapted, in combination, with a reference electrode to extend the response range of the system to detect low concentrations of the constituent being analyzed for, or component thereof, by dampening the rate of change, with time, of a potential developed between the improved sensing electrode and the reference electrode due to changes in hydrogen partial pressure at the surface of the improved sensing electrode. Preferably, the improved sensing electrode has a hydrogen-palladium (H/Pd) atomic ratio greater than 0.03 and up to and including about .60.

3,580,833

MERCURY CELL HAVING ROTATING ANODE

Roy M. Cooper, Groton, Conn., assignor to Olin Mathieson Chemical Corporation

Filed Apr. 30, 1969, Ser. No. 820,459
Int. Cl. C23b 5/68; C01d 1/08
U.S. Cl. 204—212 8 Claims



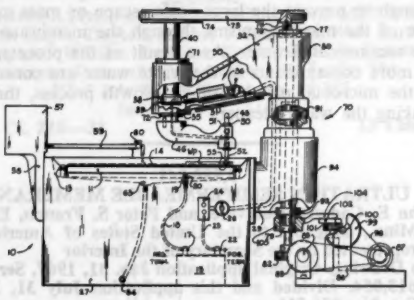
A new rotary anode, mercury cathode electrolytic cell for the manufacture of chlorine and caustic alkalies from aqueous alkali metal chloride brines provides the advantages of high current density, high current efficiency, low floor space and low cost per ton of product.

3,580,834

APPARATUS FOR MACHINING METALS ELECTROCHEMICALLY

Robert K. Sedgwick, Waukesha, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Dec. 4, 1967, Ser. No. 687,776
Int. Cl. B23p 1/02
U.S. Cl. 204—224 3 Claims



An apparatus for the electrochemical machining of flat metal surfaces which utilizes a pool of viscous electrolyte of sufficient viscosity to support a workpiece and space the workpiece very slightly from the surface plate, as well as to facilitate movement of the workpiece over the surface plate. Movement of the workpiece in combination with various viscosities of the viscous electrolyte are utilized to obtain the degree of flatness desired.

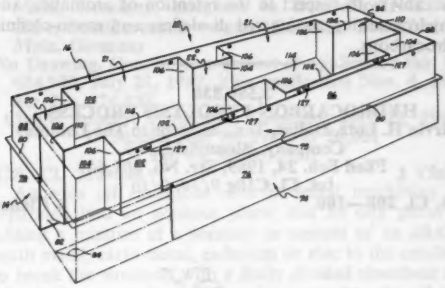
3,580,835

ELECTROLYTIC REDUCTION CELL

John R. Peterson, Oakland, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Feb. 24, 1969, Ser. No. 801,454
Int. Cl. C22d 3/02, 3/08
U.S. Cl. 204—243 23 Claims

Improved electrolytic reduction cell for producing molten magnesium metal and the like and made up of uniquely and removably arranged outer and inner shells having a mass of thermally resistant material interposed therebetween and wherein the interior of the cell is divided in an improved fashion into feed and electrolytic chambers.

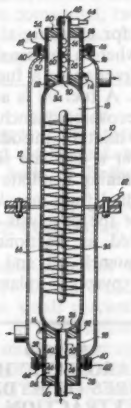


3,580,836

TREATMENT SYSTEM WITH COOLING MEANS

Arthur S. King, 1710 Baltimore, Prairie Village, Kans. 64105

Continuation-in-part of application Ser. No. 727,835, May 9, 1968. This application Apr. 8, 1969, Ser. No. 814,279
Int. Cl. B01d 13/02
U.S. Cl. 204—308 12 Claims



A fluid is subjected to an electrostatic field between an inner and an outer electrode. By use of a cooling system through the inner electrode, a dielectric on the inner electrode is protected against the delectrious effects of the treated fluid when the latter is heated.

3,580,837

HYDROREFINING OF COKE-FORMING HYDROCARBON DISTILLATES

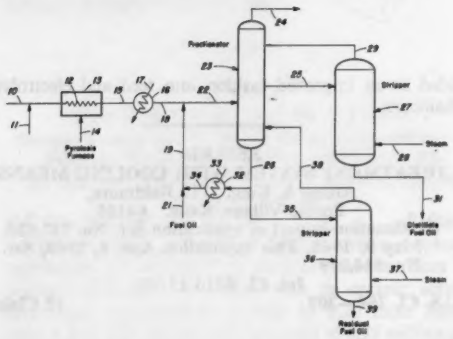
Ernest L. Pollitzer, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Apr. 7, 1969, Ser. No. 814,173
Int. Cl. C10g 23/00
U.S. Cl. 208—57 7 Claims

A process for hydrorefining sulfurous hydrocarbon distillates containing mono-olefinic, di-olefinic and aromat-

ic hydrocarbons. Through the use of particular catalytic composites containing metallic components from Group VII–B, having an atomic number greater than 25, and the noble metals of Group VIII, increased selectivity and stability of operation is attained. The selectivity is most noticeable with respect to the retention of aromatics, and in hydrogenating conjugated di-olefinic and mono-olefinic hydrocarbons.

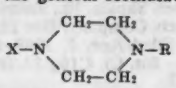
3,580,838
HYDROCARBON PYROLYSIS PROCESS
Irvin H. Lutz, Dallas, Tex., assignor to The Lummus Company, Bloomfield, N.J.
Filed Feb. 24, 1969, Ser. No. 801,649
Int. Cl. C10g *9/14, 9/16*
U.S. Cl. 208—100 **8 Claims**



Improved process for cracking a hydrocarbon feed in a pyrolysis furnace wherein the sensible heat of the effluent is employed to fractionate a fuel oil into a distillate and residual fraction. A fuel oil is added to the pyrolysis effluent, along with recovered quench oil, to effect quenching thereof and the mixture introduced into a gasoline fractionator to recover a distillate sidestream. The distillate sidestream, containing distillate fractions from both the effluent and residual fuel, may be employed to meet fuel requirements for the pyrolysis furnace. In addition, the residual recovered as fractionator bottoms is employed to provide quench oil and meet other fuel requirements for the pyrolysis plant or an extraneous operation.

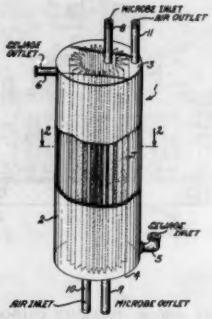
3,580,839
RECOVERY OF AROMATIC HYDROCARBONS FROM MIXTURES OF HYDROCARBONS BY SELECTIVE EXTRACTION WITH A SUBSTITUTED PIPERAZINE SOLVENT
Ernst Fuerst, Neustadt, and Hans-Martin Weitz, Frankenthal, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Dec. 19, 1968, Ser. No. 785,368
Claims priority, application Germany, Dec. 30, 1967, P 16 45 709.3
Int. Cl. C10g *21/20*
U.S. Cl. 208—326 **8 Claims**

Recovery of aromatic hydrocarbons from mixtures of hydrocarbons which contain paraffins and possibly olefins and/or naphthenes by using as extractants piperazine derivatives having the general formula:



where X denotes formyl or acetyl and R denotes lower alkyl.

3,580,840
PROCESS FOR TREATING SEWAGE AND OTHER CONTAMINATED WATERS
Joseph E. Uridil, St. Paul, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed Mar. 18, 1969, Ser. No. 808,267
Int. Cl. C02c *1/02*
U.S. Cl. 210—11 **9 Claims**



Sewage and other chemically impure waters are made cleaner by a process which involves the removal or extraction from the water of various contaminants by the controlled growth of selected microorganisms using the sewage or other impure water as the basic growth substrate. The microorganisms (both as the inoculant and as the growth product) are isolated from the sewage or other contaminated water by means of a porous membrane or barrier of restricted pore size (e.g. 0.8–2 microns). These pores are large enough to permit molecules of the contaminants to pass through or penetrate the porous barrier to thereby contact and be acted upon or assimilated by the microorganisms. These pores are small enough to prevent the large scale escape or mass migration of the microorganisms through the membrane into the contaminated water. As a result of the process, one or more contaminants in the waste water are consumed in the microbial metabolism or growth process, thereby making the water cleaner.

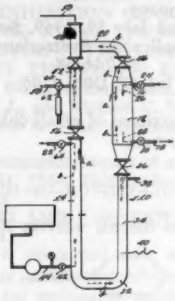
3,580,841
ULTRATHIN SEMIPERMEABLE MEMBRANE
John E. Cadotte, Roseville, and Peter S. Francis, Edina, Minn., assignors to the United States of America as represented by the Secretary of the Interior
No Drawing. Original application Jan. 31, 1967, Ser. No. 613,054. Divided and this application July 31, 1969, Ser. No. 856,516
Int. Cl. B01d *13/00, 31/00*
U.S. Cl. 210—23 **17 Claims**

An ultrathin semipermeable reverse osmosis membrane which may be made by casting a concentrated polymer solution on a liquid surface and then evaporating, and which may be laminated with a separate porous support membrane to form a composite reverse osmosis membrane. A process of separating solvent from solution by reverse osmosis comprising bringing that solution into contact with a membrane comprising a semipermeable ultrathin membrane at a pressure above the osmotic pressure.

3,580,842
DOWNFLOW ION EXCHANGE
Irwin R. Higgins, Oak Ridge, Tenn., assignor to Chemical Separation Corporation, Oak Ridge, Tenn.
Filed Apr. 8, 1968, Ser. No. 719,389
Int. Cl. B01d *15/02, 15/06;* C02b *1/16*
U.S. Cl. 210—25 **11 Claims**

A continuous cyclic process for countercurrent contact of a contaminant containing liquid with a solid in a

column loop which includes introducing the contaminant containing liquid into the upper portion of one section of the column loop for downward flow through the solids bed therein to transfer or load the contaminant onto the solids. The section is positioned adjacent the upper end of the column loop. Liquid with a reduced amount of



contaminant is withdrawn from the lower portion of this section. A regenerating agent is fed to the lower portion of another section of the column loop for flow through a bed of solids loaded with the contaminant. The flow of liquid and regenerating agent are interrupted and the solids bed is shifted around the loop and the loading and regenerating cycles are then repeated.

3,580,843

CHROMATOGRAPHIC MEDIUM AND METHOD

Ival O. Salyer, Dayton, Robert T. Jefferson, West Carrollton, and William D. Ross, Eaton, Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

Filed July 27, 1970, Ser. No. 58,382
Int. Cl. B01d *15/08*
U.S. Cl. 210—31 **13 Claims**

An improvement in a chromatographic column in which the chromatographic medium or support is an open-pore polyurethane structure filling the column wall-to-wall; the process for filling the column with a homogeneous precursor solution; and the process for using the column to separate organic compounds such as hydrocarbons and metal derivatives of diketones.

3,580,844

METHOD OF PROCESSING OIL EMULSIONS USED IN METAL MACHINING

Helmut Fratzscher, Gross-Auheim, Kurt Klein, Langen, Hessen, Joachim Maluzi, Gross-Auheim, and Peter Hansen and Werner Schmitz, Wolfgang B. Hanau am Main, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of application Ser. No. 654,990, July 21, 1967. This application Nov. 4, 1969, Ser. No. 874,035
Claims priority, application Germany, July 22, 1966, D 50,648; Jan. 19, 1967, D 52,051
Int. Cl. B01d *15/00*
U.S. Cl. 210—40 **3 Claims**

Aqueous oil emulsions used in metal machining are separated into an aqueous phase and an oily phase by adding a mixture of a formate or acetate of an alkaline earth metal, earth metal, cadmium or zinc to the emulsion to break the emulsion with a finely divided absorbent and adsorb the separating oil, thereby converting the oil to a filterable form and filtering it off.

3,580,845

ACID CONTAINING ELECTROLYTIC LIQUID FOR AN ELECTROLYTIC CAPACITOR

Hildegard Dahle, Herborn, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed Aug. 22, 1969, Ser. No. 852,449
Claims priority, application Germany, Aug. 22, 1968, P 17 64 869.0
Int. Cl. H01g *9/00*
U.S. Cl. 252—62.2 **4 Claims**

The invention relates to a low-resistive electrolyte liquid for an electrolytic capacitor which liquid consists of a mixture of a multivalent alcohol in water as a solvent, a basic nitrogen compound, two inorganic acids and one organic acid and/or reaction products of these acids or of the nitrogen compound.

3,580,846

FERROELECTRIC CERAMIC MATERIALS

Chiyoshi Okuyama, 2–14 Nishiki-cho, and Syuzo Osumi, 1–15 Hikari-cho, both of Fujinomiya-shi, Shizuoka-ken, Japan

Filed Nov. 10, 1969, Ser. No. 875,368
Int. Cl. C04b *35/46, 35/48*
U.S. Cl. 252—62.9 **4 Claims**

Ferroelectric ceramic materials having essentially the composition $Pb(Zr\text{-}Ti)O_3$ or $Pb(Zr\text{-}Ti\text{-}Sn)O_3$ and containing Bi and Nb in small percentage exhibit improved coupling coefficients. As modifications, the materials may also contain Mn in small percentage and part of the Pb may be replaced by Ba, Sr or both. The materials are particularly useful as ceramic wave filters and piezoelectric voltage sources.

ERRATUM

For Class 252—71 see:
Patent No. 3,580,759

3,580,847

HYDRAULIC FLUID

Matthew A. Boehmer, Allen Park, and Jerrold F. Maxwell, Trenton, Mich. (both % Wyandotte Chemicals Corp., Wyndotte, Mich. 48192)

No Drawing. Filed June 16, 1967, Ser. No. 646,498
Int. Cl. C09k *3/00*
U.S. Cl. 252—75 **7 Claims**

A two-phase hydraulic fluid composition which comprises (A) a conventional aqueous hydraulic fluid base as a first phase and (B) a liquid having a specific gravity less than that of the aqueous hydraulic fluid base (A) as

a second phase which liquid (B) is immiscible with base (A) and forms a supernatant layer floating on the surface of the aqueous base (A).

3,580,848

FUNCTIONAL FLUIDS CONTAINING CARBON DIOXIDE FOR PREVENTING CAVITATION DAMAGE

Neal W. Furby, Berkeley, Douglas Godfrey, San Rafael, and Robert L. Peeler, Albany, Calif., assignors to Chveron Research Company, San Francisco, Calif.

No Drawing. Filed Dec. 18, 1967, Ser. No. 691,150
Int. Cl. C09k *3/00*; C10m *3/40*; C23f *11/18*
U.S. Cl. 252—78 **8 Claims**

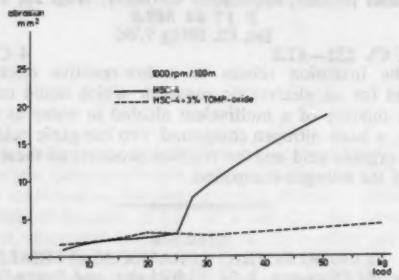
Functional fluid containing a minor amount of carbon dioxide as a cavitation damage-inhibiting additive.

3,580,849

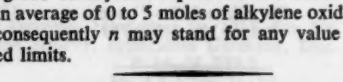
LUBRICANT

Peter Geymayer and Siegfried Billenstein, Burgkirchen (Alz), and Werner Renz, Burghausen, Salzach, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Sept. 2, 1969, Ser. No. 854,599
Claims priority, application Germany, Sept. 5, 1968, P 17 94 094.2
Int. Cl. C09k *3/00*; C10m *3/42*; C07f *9/50*
U.S. Cl. 252—78 **2 Claims**



Lubricants are described for hydraulic fluids which do not consist of mineral oil and contain minor or major proportions of water. Such lubricants are compounds corresponding to the general formula



in which X stands for S or O, R is CH_3 or H and *n* has the meaning 0–5/3. The compounds are, thus, tris-(hydroxymethyl)-phosphine oxide or sulfide and the oxalkylation products thereof which contain up to 5 ethylene oxide or propylene oxide units per molecule. Practically technical grade oxalkyllation products are used which contain an average of 0 to 5 moles of alkylene oxide per mole, and consequently *n* may stand for any value within the defined limits.

3,580,850

STABILIZED NONIONIC SURFACTANTS IN SOLID FORMULATIONS CONTAINING ACTIVE CHLORINE COMPOUNDS

Jean Dupre, Levittown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed July 17, 1967, Ser. No. 653,674
Int. Cl. C11d *7/56*
U.S. Cl. 252—99 **2 Claims**

A solid built detergent formulation consisting of a low foaming nonionic surfactant containing a minor amount of an antioxidant, an active chlorine agent, and an alkaline builder, the antioxidant serving to stabilize the surfactant against degradation caused by the oxidative or other aggressive effects of the chlorine.

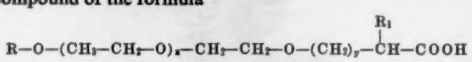
3,580,851

STABLE ALKALI CHLORITE MIXTURES

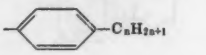
Christian Heid and Karl-Heinz Keil, Frankfurt am Main-Fechenheim, Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt am Main-Fechenheim, Germany

No Drawing. Filed July 29, 1969, Ser. No. 845,883
Claims priority, application Switzerland, Aug. 6, 1968, 11,744/68
Int. Cl. D06l *3/06*
U.S. Cl. 252—99 **6 Claims**

Stable aqueous mixtures of alkali chlorite containing a compound of the formula



or alkali metal salts thereof wherein R is $-C_nH_{2n+1}$ or



n is 6 to 18;
x is 6 to 30;
y is 0 or 1; and
R_1 is hydrogen or methyl.

3,580,852

DETERGENT FORMULATIONS CONTAINING TETRAHYDROFURAN 2,3,4,5 - TETRACARBOXYLIC ACID SALTS AS BUILDERS

Meiling T. Yang, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed May 19, 1969, Ser. No. 825,983
Int. Cl. C11d *3/20, 7/26*
U.S. Cl. 252—135 **10 Claims**

To obviate eutrophication of water, non-phosphorus detergent builders are provided. These are the water-soluble salts of tetrahydrofuran 2,3,4,5-tetracarboxylic acid (e.g., the tetrasodium salt thereof). Conventional detergent actives may be used with these builders.

3,580,853

DETERGENT COMPOSITIONS CONTAINING PARTICLE DEPOSITION ENHANCING AGENTS

John J. Parran, Jr., Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Sept. 27, 1967, Ser. No. 671,117
Int. Cl. C11d *3/22, 3/48*
U.S. Cl. 252—152 **10 Claims**

Detergent compositions containing water-insoluble particulate substances, such as antimicrobial agents, and certain cationic polymers which serve to enhance the deposition and retention of such particulate substances on surfaces washed with the detergent composition.

3,580,854

SEQUESTERING AGENTS FOR METAL ION CONTAMINATION IN SIDE-CHAIN HALOGENATION OF ALKYL-AROMATIC HYDROCARBONS COMPRISING PHOSPHOROUS HALIDE AND ORGANIC PHOSPHATE

Ralph H. Lasco, Painesville, Ohio, assignor to Diamond Alkali Company, Cleveland, Ohio

No Drawing. Filed June 29, 1966, Ser. No. 561,340
Int. Cl. B01j *1/10*; C07c *17/14, 25/14*
U.S. Cl. 252—181 **1 Claim**

Metal ion contaminated, alkyl-aromatic hydrocarbons such as p-xylene contaminated with a trace amount of iron, are successfully side-chain halogenated by employ-

ing during halogenation a synergistic mixture of sequestering agent for such contamination. This mixture contains a phosphorus halide plus an organic phosphate. Even visibly contaminated hydrocarbons can be successfully side-chain halogenated. The organic phosphate is provided by an aryl phosphate, an alkyl phosphate, or their mixtures.

3,580,855

PROCESS FOR INHIBITION OF SCALE AND CORROSION USING A POLYFUNCTIONAL PHOSPHATED POLYOL ESTER HAVING AT LEAST 75% PRIMARY PHOSPHATE ESTER GROUPS

James C. Mickus, Bloomington, Minn., David B. Fordyce, Moorestown, N.J., and Richard C. Mansfield, Warminster, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 576,252, Aug. 31, 1966. This application Apr. 9, 1969, Ser. No. 814,818

Int. Cl. C02b *5/06;* **C07f** *9/08*

U.S. Cl. 252—181 **6 Claims**

The invention is concerned with methods for maintaining an effective corrosion-inhibiting environment in aqueous systems, for preventing precipitation of Fe(II) from such systems, and for dispersing water-insoluble solids in aqueous suspension, said methods involving the treatment of the water systems with small amounts of a specific polyfunctional phosphated polyol ester characterized in that the ester has at least about 75% primary phosphate ester groups.

3,580,856

GETTER COMPOSITION FOR ELECTRIC LAMPS AND SIMILAR DEVICES

Edward G. Zubler, Chagrin Falls, Ohio, assignor to General Electric Company

Filed May 22, 1969, Ser. No. 826,888

Int. Cl. H01j *7/18;* **H01k** *1/56*

U.S. Cl. 252—181.6 **2 Claims**

The rate and extent (to about 100%) of thermal decomposition of P_3N_5 getter are increased by providing a catalyzer metal in contact with the solid P_3N_5 or its primary gaseous decomposition products.

3,580,857

STABLE LIQUID DICARBOXYLIC ACID ANHYDRIDE COMPOSITION

Chao-Shing Cheng, Williamsville, and Francis E. Evans, Hamburg, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Feb. 8, 1968, Ser. No. 703,866

Int. Cl. C07c *63/00;* **C08f** *45/60*

U.S. Cl. 252—182 **20 Claims**

Production of stable liquid organic carboxylic anhydrides by adding to an unstable liquid anhydride a freeze-thaw stabilizing amount of an organic isocyanate or carbodimide; if desired, the resultant liquid anhydride may be purified by subjecting the same to distillation to recover, as distillate, a pure anhydride which may be stored for extended periods without deposition of solids.

3,580,858

STABLE LIQUID ANHYDRIDE COMPOSITIONS

Francis E. Evans, Hamburg, and Chao-Shing Cheng, Williamsville, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Feb. 8, 1968, Ser. No. 703,902

Int. Cl. C07c *63/00;* **C08f** *45/58*

U.S. Cl. 252—182 **17 Claims**

Novel liquid cyclic polycarboxylic acid anhydride mixtures which are stabilized against deposition of solids by incorporation of a small amount of at least one polyether polyol of more than 12 carbon atoms.

3,580,859

ACTIVE MATERIAL FOR LASERS

Igor Mikhailovich Buzhinsky, Pervomaiskaya ul. 5, kv. 46, Moskovskaya Obl., Lytkarino, U.S.S.R.; and Mark Efremovich Zhabotinsky, Pogodinskaya ul. 2/3, kv. 53; Jury Petrovich Rudnitsky, Babushkin, Troitsky per. 43, kv. 65; Vadim Vasilievich Tsapkin and Irma Vyacheslavovna Tsapkina, both of Tatarskaya ul. 9-a, kv. 13; and Georgy Vladimirovich Ellert, Ul. Garibaldi 19, korp. 2, kv. 53, all of Moscow, U.S.S.R.

Filed Dec. 20, 1967, Ser. No. 692,179

Int. Cl. C09k *1/04;* **C03c** *3/28*

U.S. Cl. 252—301.1 **5 Claims**

Laser glasses consisting of 30–90 wt. percent of P_2O_5; 2–40 wt. percent of each of Na_2O and Li_2O; 1–6 wt. percent Nd_2O_3 and additives of aluminum oxides or halides, halides of tin and ions of Cu, Mn, Cr, U and Ag; the total amount of said additives being not more than 20 wt. percent.

3,580,860

INFRARED-EXCITABLE ALKALINE EARTH THORIUM FLUORIDE LUMINESCENT MATERIALS

James F. Sarver, Lyndhurst, and Ralph A. Hewes, Cleveland Heights, Ohio, assignors to General Electric Company

Filed May 2, 1969, Ser. No. 831,807

Int. Cl. C09k *1/06*

U.S. Cl. 252—301.1 **13 Claims**

The invention relates to alkaline earth thorium fluoride materials activated with ytterbium and erbium. The materials respond to infrared excitation and produce visible light.

3,580,861

METHOD OF PREPARING RARE-EARTH METAL ORTHOVANADATE PHOSPHORS BY PRECIPITATION

Richard C. Ropp, Warren, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

No Drawing. Filed Mar. 18, 1969, Ser. No. 808,320

Int. Cl. C09k *1/44*

U.S. Cl. 252—301.4R **13 Claims**

An improved method of precipitating rare-earth metal orthovanadate phosphor from aqueous solution. The constituents are dissolved in acid solution, with vanadium pentoxide being dissolved in hydrochloric acid to provide a high concentration of vanadyl radical in solution. Predetermined amounts of ammonium hydroxide and hydrogen peroxide are admixed with the rare-earth metal and vanadium containing acid solutions so that the pH of the resulting mixture is determined to provide a condition under which rare-earth metal orthovanadate is very efficiently precipitated. The precipitant is calcined to provide an activated, efficient rare-earth metal orthovanadate phosphor.

3,580,862

CONTINUOUS PROCESS FOR PREPARING ALKALI METAL DISPERSIONS AND APPARATUS

Lloyd M. Watson and William R. Birchall, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 302,038, Aug. 14, 1963. This application Aug. 18, 1967, Ser. No. 667,023

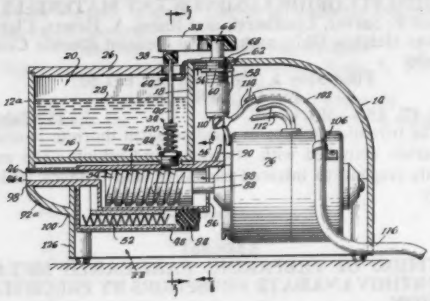
Int. Cl. B01j *13/00*

U.S. Cl. 252—309 **12 Claims**

A process for preparing continuously a dispersion in an inert organic diluent of a finely-divided alkali metal, such as sodium, substantially uniform in particle size and alkali metal concentration is provided wherein a molten alkali metal is dispersed in an inert organic diluent with a dispersing aid which is soluble in the inert diluent, and if necessary, a stabilizing agent, by subjecting the molten alkali metal to high shear forces, and forming alkali metal

particles less than and greater than a predetermined median. The coarse particles of molten alkali metal at or above the median size are allowed to settle out, and the supernatant fine particles of molten alkali metal at or below the median size are drawn off. The coarse particles are continuously returned to the zone of high shear to further reduce their size, and alkali metal is continuously added to the zone, while the dispersion of fine particles of alkali metal having a size at or below the median, and substantially uniform in alkali metal concentration is continuously withdrawn.

3,580,863
LATHER MACHINE
Albert B. Campbell, Glenn Ellyn, Ill., assignor to Royal Products Company, Bensenville, Ill.
Continuation-in-part af application Ser. No. 729,577, May 16, 1968. This application Aug. 22, 1968, Ser. No. 755,520
Int. Cl. B01f *7/08*
U.S. Cl. 252—359 **9 Claims**



A compact, parallel, direct delivery type lather machine having a one-piece housing with compartments for a liquid soap reservoir and the lather forming components. The machine includes a lather guard having a first portion flush with the lower edge of the lather outlet, and a convex, extension-like portion depending below and on each side of the lather outlet to keep the operator's hand from blocking the outlet. An improved liquid soap valve has an O-ring seal readily replaceable by snapping the O-ring on the end of the valve stem. An improved one-piece frame member for lather machines which includes a heating chamber surrounding the whipping chamber, a liquid soap inlet at one end of the member, a lather outlet at the other end of the member, and the heating chamber being sealed at the liquid soap inlet end of the member with the other end of the heating chamber being open for insertion of the heating elements.

ERRATUM

For Class 252—389 see:
Patent No. 3,580,934

3,580,864
CHOLESTERIC-PHASE LIQUID-CRYSTAL COMPOSITIONS STABILIZED AGAINST TRUE-SOLID FORMATION, USING CHOLESTERYL ERUCYL CARBONATE
Newton N. Goldberg, Pittsburgh, Pa., and James L. Fergason, Kent, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
No Drawing. Filed Apr. 30, 1969, Ser. No. 820,658
Int. Cl. C07c *69/76;* **C09k** *3/04*
U.S. Cl. 252—408 **8 Claims**

Stability of cholesteric-phase liquid-crystal compositions is improved by inocorporating therein an amount, up to 100%, of cholesteryl erucyl carbonate, a novel compound, made by reaction of cholesteryl chloroformate with erucyl alcohol and pyridine. The novel carbonate does not crytallize to true solid in several months, whereas most other liquid-crystal compositions transform to true solid within several hours to several days. Moreover, the novel carbonate does itelf exibit a color play, so that it may be used in very large amounts in cholesteric-phase liquid-crystal compositions, without decreasing the vividness of the color changes exhibited thereby.

3,580,865
STABILIZATION OF CHOLESTERIC-PHASE LIQUID CRYSTAL COMPOSITIONS AGAINST TRUE SOLID FORMATION, USING CHOLESTERYL p-NONYLPHENYL CARBONATE
Newton N. Goldberg, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
No Drawing. Filed Apr. 30, 1969, Ser. No. 820,659
Int. Cl. C07c *69/76;* **C09k** *3/04*
U.S. Cl. 252—408 **10 Claims**

Stability of cholesteric-phase liquid-crystal compositions is improved by incorporating therein cholesteryl p-nonylphenyl carbonate, a new compound, made by reaction of cholesteryl chloroformate with p-nonylphenol and pyridine. The p-nonylphenyl carbonate does not crystallize to true solid in three years, but the corresponding p-octylphenyl carbonate starts crystallizing to true solid in three weeks.

3,580,866
PROCESS FOR PRODUCING HIGH MOLECULAR WEIGHT POLYMERS OF ALKYLENE OXIDES
Teruhiko Ito, Naoshi Mitsui, Seiichiro Maeda, and Takeshi Kato, Kakogawa-shi, Japan, assignors to Seitetsu Kagaku Co., Ltd., Hyogo-ken, Japan
No Drawing. Filed Oct. 27, 1967, Ser. No. 678,516
Int. Cl. C08f *7/12*
U.S. Cl. 260—2 **41 Claims**

A process for producing a high molecular weight polymer of an alkylene oxide which comprises contacting an alkylene oxide with a novel catalyst at a temperature of from −50° C. to +150° C., said catalyst being prepared by partially hydrolyzing an aluminum alkoxide with water in an amount of 0.01 to 2.8 moles per mole of the alkoxide in a liquid, inert medium and mixing the resulting partial hydrolyzate with an organo-metallic compound of a metal of Group II or III of the Periodic Table in an amount of 0.001 to 2.5 moles per mole of the starting aluminum alkoxide. When the above polymerization is effected in the presence of a tertiary amine, the polymerization degree is increased.

3,580,867
PROCESS FOR PREPARING A CLOSED CELL EPDM SPONGE COMPOSITION
Lawrence Spenadel, Westfield, N.J., assignor to Esso Research and Engineering Company
Filed Aug. 30, 1967, Ser. No. 664,493
Int. Cl. C08d *13/10, 9/16*
U.S. Cl. 260—2.5 **7 Claims**

A compounded ethylene-propylene diene monomer (EPDM) suitable for use in manufacturing an improved closed cell sponge by the free expansion method and the process for preparing said compounded EPDM which comprises blending the EPDM with a reinforcing black and a chemical promoter and heat treating at an elevated temperature for a time sufficient to bond the EPDM to the reinforcing black, thereby increasing the tensile modulus of the EPDM.

3,580,868

POLYISOCYANURATE RESIN AND FOAM FORMATION CATALYZED BY MANNICH BASES

Hans Joachim Diehr, Rudolf Merten, Helmut Piechota, and Konrad Uhlig, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 27, 1968, Ser. No. 787,559
Claims priority, application Germany, Jan. 2, 1968, P 17 20 769.1
Int. Cl. C08g *22/36, 22/46*
U.S. Cl. 260—2.5 7 Claims

Synthetic resins especially foams are prepared by polymerisation of compounds which contain more than one isocyanate group in the molecule, in the presence of Mannich base catalysts which are obtained by reaction between dimethylamine, formaldehyde and phenols which contain in the molecule at least one organic substituent which has at least 6 carbon atoms, optionally, in the presence of less than equivalent quantities of compounds which contain active hydrogen atoms and the usual auxiliary agents.

3,580,869

MICROCELLULAR POLYURETHANE FOAMS BASED ON AROMATIC POLYAMINES AND PROPOXYLATED ANILINE

Richard D. Rhodes, Jr., Somersworth, and Kirby E. L. Flanagan, Rochester, N.H., assignors to Davidson Rubber Company Inc., Dover, N.H.

No Drawing. Continuation-in-part of application Ser. No. 733,765, June 3, 1968. This application June 3, 1969, Ser. No. 830,095
Int. Cl. C08g *22/46*
U.S. Cl. 260—2.5 2 Claims

A microcellular polyurethane foam prepared by reacting in the presence of an organometallic catalyst:

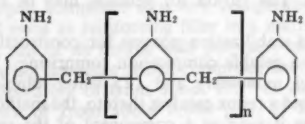
(1) toluene diisocyanate;

(2) a polyol selected from the group consisting of:

(A) organic triols having molecular weights of from about 1,500 to about 6,500 and

(B) mixtures of (I) organic triols having molecular weights of from about 1,500 to about 6,500 and (II) organic diols having molecular weights of from about 400 to about 2,800;

(3) an aromatic amine having the formula:



where *n* equals from about 0.1 to about 0.3; and

(4) a propoxylated aniline having the formula:

proportions of (1) to (2) to (3) to (4) being such that:

(a) the ratio of —NCO to active hydrogen atoms is in the range of from 1.0:1.0 to 1.2:1.0;

(b) the ratio of $—NH_2$ groups of the aromatic amine to —OH groups is in the range of from 0.6:1.0 to 1.0:1.0; and

(c) the weight ratio of aromatic amine to the sum of aromatic amine and propoxylated aniline is from 0.45:1.0 to 0.95:1.0.

3,580,870

BEADED INJECTABLE SEALING COMPOSITION

Robert E. Rosner, Ferguson, Mo., assignor to McDonnell Douglas Corporation, St. Louis County, Mo.

Filed Dec. 6, 1968, Ser. No. 781,796
Int. Cl. C08j *1/14;* B01j *13/02*
U.S. Cl. 260—2.5 4 Claims

A sealant composition including a sealant medium containing specifically sized and shaped particle to improve the completeness of sealing the gaps and spaces that occur between a pair of sealable components due to manufacturing tolerances, the sealant composition being injected under pressure so that said particles are available to fill the gaps and spaces by a clustering formation to block the escape paths of the sealant medium, without interfering with the normal passage provided for distribution of the sealant composition.

3,580,871

PROCESS FOR THE MANUFACTURE OF POLYMER DISPERSIONS WITH POSITIVE ZETA POTENTIAL

Karl Josef Rauterkus, Kelkheim, Taunus, and Hamsjorg Vollmann, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of application Ser. No. 640,490, May 23, 1967. This application July 15, 1969, Ser. No. 842,005
Claims priority, application Germany, June 1, 1966, F 49,358
Int. Cl. C08f *1/13*
U.S. Cl. 260—17 5 Claims

Polymer dispersions with positive zeta potential produced by emulsion polymerization of at least one vinyl, vinylidene, acryl or methacryl compound in the presence of a free radical polymerization catalyst and in the presence of at least one basically substituted N-vinyl amide.

3,580,872

READY-TO-USE PHENOLIC ADHESIVES

Alan L. Lambuth, Bellevue, Wash., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Oct. 22, 1968, Ser. No. 769,702
Int. Cl. C08g *51/14;* C08h *17/26*
U.S. Cl. 260—17.2R 11 Claims

A ready-to-use phenolic adhesive for the manufacture of plywood is described which contains a micronized solid residue of the acid hydrolysis of pentosan-containing materials. The adhesive is prepared by digesting the micronized solid residue in an alkali solution and then reacting phenol and formaldehyde in the solution containing the residue.

3,580,873

NONYELLOWING POLYURETHANE

Dominick Bianca, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 18, 1967, Ser. No. 676,033
Int. Cl. C08g *22/08*
U.S. Cl. 260—18 7 Claims

A nonyellowing polyurethane prepared by reacting an isocyanato-terminated prepolymer with a mixture of monoethanolamine and triethanolamine in the presence of a catalytic amount of a metal drier compound such as calcium-, zinc- or lead naphthenate or octoate.

3,580,874

DYEABLE PILL-RESISTANT POLYESTERS

Akihiro Nishimura, Williamsburg, Va., assignor to Dow Badische Company, Williamsburg, Va.

No Drawing. Filed July 16, 1969, Ser. No. 842,389
Int. Cl. C08f *11/02, 21/04;* C08g *17/00*
U.S. Cl. 260—22 15 Claims

Improved polyesters consist of the condensation product of a polyhydric alcohol, a major proportion of a first

dibasic acid, a minor proportion of a long chain aliphatic dibasic acid having 28–44 carbon atoms, and a minor proportion of a long chain polyfunctional compound having 30–60 carbon atoms and at least three reactive sites.

3,580,875

POLISHING COMPOSITION

John M. Behnke, Newark, N.J., assignor to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Dec. 7, 1967, Ser. No. 688,662
Int. Cl. C09g 1/10
U.S. Cl. 260—23 2 Claims

A composition used for polishing surfaces such as wood and Formica, comprised of synthetic wax, a combination of resins, a combination of plasticizers comprising a fatty acid amine soap and a fatty alcohol amine sulfate, and a non-aqueous solvent system.

3,580,876

FILM-FORMING COMPOSITION OF INTERPOLYMER LATEX AND COALESCING AGENT

Raymond A. Stone, Fairfield Farms, and Fred Lister and David S. Heller, Dover, Del., assignors to Standard Brands Chemical Industries, Inc., Dover, Del.

No Drawing. Filed Apr. 19, 1968, Ser. No. 722,536
Int. Cl. C08f 19/08, 45/24, 45/34, 45/38, 45/42; C08g 37/26, 51/24, 51/34, 51/38, 51/42
U.S. Cl. 260—29.4 15 Claims

An improved polymeric film-forming composition comprising (1) a latex of an interpolymer of an aliphatic conjugated diene, a monovinyl aromatic compound or mixtures thereof with other monovinyl compounds and an N-alkylol acrylamide and (2) a minor amount of a volatile organic azeotrope-forming coalescing agent and materials coated therewith.

3,580,877

EMULSION POLYMERS OF STYRENE AND UNSATURATED AMIDES

Alfred Reginald Corry, Dorthy Joyce Guest, and William Ian Williamson, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 18, 1967, Ser. No. 639,302
Claims priority, application Great Britain, May 25, 1966, 23,406/66
Int. Cl. B01j 13/00; C08f 15/02; C09d 5/02
U.S. Cl. 260—29.6RW 16 Claims

Aqueous dispersions of water- and alkali-insoluble solid copolymers of a major proportion by weight of (a) styrene or of a substituted styrene or of mixtures of these, with a minor proportion by weight of (b) a neutral or acidic water-soluble monomer, and optionally with a minor proportion by weight of (c) a different neutral or acidic water-soluble monomer wherein monomer (b) is concentrated at or near the surface of the particles of the copolymer. The dispersions are useful for addition to liquid synthetic detergents to give them the appearance and creamy consistency of a hand lotion.

3,580,878

FLAME-RESISTANT ACRYLONITRILE COPOLYMERS WITH HIGH RECEPTIVITY TO ACID DYES

Iyohiko Nakanome, Kenji Takeya, Hiroshi Suzuki, and Yasuhiro Kitagawa, Saidaiji, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

No Drawing. Filed June 13, 1968, Ser. No. 737,309
Claims priority, application Japan, July 1, 1967, 42/42,470; Sept. 26, 1967, 42/62,094
Int. Cl. C08f 15/40, 37/00, 45/24
U.S. Cl. 260—29.6 2 Claims

Acrylonitrile copolymers which have high receptivity to acid dyes and are flame resistant, and are thus useful in making carpeting, curtains, etc. as well as wearing apparel, etc., are ternary polymers composed of acrylonitrile, vinylidene chloride, and a basic monomer of the type of the dimethylaminoethyl and diethylaminoethyl esters of acrylic acid and of methacrylic acid, and the corresponding N-substituted aminopropyl and aminobutyl esters, etc.; or copolymers consisting of acrylonitrile, vinylidene chloride, a basic monomer of the afore-indicated type and one or more neutral ethylenically unsaturated compounds (i.e. methyl acrylate, methyl methacrylate, vinyl acetate, styrene).

3,580,879

GELABLE COMPOSITIONS AND PROCESS OF USING THE SAME

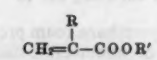
Einosuke Higashimura, Tokyo, Katsumi Tamai, Ohtakeshi, and Eiichi Nakamura, Tokyo, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

No Drawing. Filed Aug. 29, 1967, Ser. No. 663,992
Claims priority, application Japan, Sept. 8, 1966, 41/59,358
Int. Cl. C08f 15/02; F21b 33/13
U.S. Cl. 260—29.7H 6 Claims

A gelable, non-toxic and odorless composition for construction materials which comprises

(1) 1–90% by weight of metal methacrylates or acrylates, such as magnesium methacryate,

(2) 3–90% by weight of water-soluble ethenoid monomers, such as acrylamide and a compound of



(R is —H or —CH_3, and R' is an alkyl having —OH or —NH_2), and

(3) 1–30% by weight of water-soluble divinyl monomers such as glyceroldiacrylate.

A process for stabilizing such construction materials as cement and soil, wherein an aqueous solution of the composition and a redox catalyst is added thereto, and high strength and superior impermeability to water can be provided. The period for gelation may be controlled as desired.

In a rapid stabilization process for construction materials adding a gelable composition comprising (1) water-soluble vinyl monomers and (2) water-soluble divinyl monomers and a redox catalyst thereto, the method wherein β-diketone is used as a component of the redox with or without metallic ions. Sodium formaldehyde sulfoxylate, a reducing sugar, a water-soluble amine can also be used as said component.

3,580,880

DISPERSIONS OF PARTICULATE SOLIDS IN EITHER LIPOPHILIC OR HYDROPHILIC LIQUIDS STABILIZED WITH A POLYMERIC AMPHIPATHIC STABILISER AND PROCESS FOR PREPARING SAID DISPERSIONS

Michael Raymond Clarke and Leon Filipowicz, Melbourne, Victoria, Australia, assignors to Balm Paints Limited, Melbourne, Victoria, Australia

No Drawing. Filed Nov. 20, 1967, Ser. No. 684,545
Claims priority, application Great Britain, Nov. 25, 1966, 52,826/66
Int. Cl. C08f 45/24; C08g 53/18; C08j 1/46
U.S. Cl. 260—29.6R 16 Claims

A process of preparing stable dispersions of particulate solids in either lipophilic or hydrophilic liquids by dispersing the solids in the liquid in the presence of a polymeric

amphipathic stabiliser which associates with the surface of the particles and provides a solvated steric barrier around them. The stabilisers comprise at least one chain-like component solvatable by a lipophilic liquid and with a chain-length equivalent to at least 12 covalent links together with at least one component solvatable by a hydrophilic liquid, each component being present in the weight proportion of at least 25% of the total weight of stabiliser. The stabilisers may comprise up to 10% by weight of ionizable groups, preferably co-reacted with counter-ions solvatably by a hydrophilic liquid.

3,580,881

POLYURETHANE COATING SYSTEM

Henry J. Lee, 12 Knollwood Drive, Cherry Hill, N.J. 08034

No Drawing. Filed Feb. 27, 1970, Ser. No. 15,227

Int. Cl. C08g *22/06, 51/34, 51/36*

U.S. Cl. 260—30.4 **10 Claims**

Present invention relates to a novel and improved method of protecting a surface with a polyurethane coating that exhibits outstanding chemical and physical properties. The improved process utilizes the ability of aromatic polyisocyanates to dimerize and trimerize and react with a short chain aliphatic glycol under carefully controlled conditions of heat to form a unique prepolymer. The prepolymer, when dissolved in a suitable solvent, has a prolonged stable shelf life and, when applied to the surface to be protected, cures itself on the mere evaporation of the solvent.

3,580,882

MICA-REINFORCED COMPOSITES

Lawrence E. Nielsen, Creve Coeur, and Joseph E. Fields, Ballwin, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 753,857, Aug. 20, 1968. This application Nov. 29, 1968, Ser. No. 780,272

Int. Cl. C08f *45/04*

U.S. Cl. 260—41 **5 Claims**

A shaped composite structure comprising finely comminuted mica as reinforcing filler in a matrix comprising the zinc salt of an acrylic acid polymer, and the method of preparing the same which comprises heating in a mold at a temperature of from about 175° C. to 400° C. and a pressure of from about 5,000 p.s.i. to 50,000 p.s.i. a mixture of zinc oxide and an acrylic acid polymer in contact with the mica.

3,580,883

METHOD OF CHEMICAL GROUT PROCESSING

Shigekazu Kasahara, Yuji Takahashi, Takashi Suzuki, Shinichi Umeda, Kazuo Adachi, and Yasuo Fukuda, Tokyo, Japan, assignors to Tekkosha Co., Ltd., Tokyo, Japan

No Drawing. Filed Jan. 14, 1969, Ser. No. 791,137

Claims priority, application Japan, Jan. 18, 1968, 43/2,385

Int. Cl. C08f *45/04*

U.S. Cl. 260—41 **9 Claims**

A composition of matter comprising a synthetic resin and a water soluble organic solvent which can dissolve said resin, which composition may also contain cement and/or sodium silicate, is injected into soil. The organic solvent is dissolved away by the ground water which is present in the soil and the remaining solid component fills the spaces in the soil, whereby water paths in the soil are blocked.

3,580,884

TETRAHYDROQUINOXALINE/ALDEHYDE REACTION PRODUCTS AS POLYMER ANTIOZONANTS

Farris H. Wilson, Jr., Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Mar. 29, 1968, Ser. No. 717,463

Int. Cl. C08f *11/04;* **C08g** *51/60*

U.S. Cl. 260—45.8 **7 Claims**

Polymers protected against ozone degradation by the incorporation of a reaction product produced by reacting a tetrahydroquinoxaline (1,2,3,4-tetrahydroquinoxaline) with an aldehyde (formaldehyde).

3,580,885

ANTIOZONANTS

Elmer A. Fike, Nitro, W. Va., assignor to Security Chemicals, Inc., Nitro, W. Va.

No Drawing. Filed Sept. 27, 1968, Ser. No. 763,381

Int. Cl. C08c *11/40, 11/54;* **C08d** *9/00*

U.S. Cl. 260—45.8 **11 Claims**

The invention relates to novel N-substituted dimethyl pyrroles for use as antiozonants in rubber.

3,580,886

POLYESTERS STABILIZED WITH AROMATIC ISOCYANATES

Mary J. Stewart, Media, and John A. Price, Swarthmore, Pa., assignors to FMC Corporation, Philadelphia, Pa.

No Drawing. Filed June 5, 1968, Ser. No. 734,534

Int. Cl. C08g *51/60*

U.S. Cl. 260—45.9 **9 Claims**

A thermal stabilized polyester comprising a highly polymeric linear polyester containing a stabilizing amount of an aromatic mono- or polyisocyanate.

3,580,887

ELASTOMERIC PRODUCTS OF EPOXY RESINS AND POLYETHER DISECONDARY AMINES

Allen J. Hubin, White Bear Lake, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Apr. 21, 1969, Ser. No. 818,114

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 **8 Claims**

An elastomeric reaction product of an epoxy resin and at least one amine having a minimum of 2 amino hydrogen atoms per molecule, at least one portion of said amine being a polyether disecondary amine.

3,580,888

WITHDRAWN

3,580,889

VULCANIZATION ACCELERATORS OF POLYCYCLIC ETHERS FOR FLUORINATED POLYMERS

Arthur Livingston Barney and Wolfgang Honsberg, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned applications Ser. No. 661,230, Aug. 17, 1967, and Ser. No. 731,325, May 22, 1968. This application Feb. 25, 1969, Ser. No. 802,236

Int. Cl. C08f *7/10, 3/20, 19/00*

U.S. Cl. 260—47 **17 Claims**

The acceleration of the vulcanization of saturated, fluorinated polymers by the use of cyclic polyethers. The accelerators enable a more rapid cure with conventional amine-based vulcanization systems and also enable a satisfactory rate and state of cure with weakly basic bis-nucleophiles otherwise incapable of adequately curing fluorinated polymers.

3,580,890

BASIC CATALYSTS CONTAINING AROMATIC NUCLEI AND ARALIPHATICALLY BOUND TERTIARY AMINO GROUPS FOR THE POLYMERIZATION OF NCO GROUPS

Hans Joachim Diehr and Rudolf Merten, Leverkusen, Helmut Piechota, Leverkusen-Mathildenhof, and Konrad Uhlig, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 25, 1968, Ser. No. 770,800
Claims priority, application Germany, Oct. 31, 1967, F 53,928, F 53,929
Int. Cl. C08g 22/00
U.S. Cl. 260—77.5 13 Claims

A process for the production of polyisocyanurates wherein compounds or mixtures of compounds containing at least two isocyanate groups are reacted in the presence of basic compounds containing at least two aromatic nuclei and at least on araliphatically bound tertiary amino function per molecule.

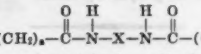
3,580,891

WATER-INSOLUBLE, CROSS-LINKED POLYMERIC REACTION PRODUCT OF ETHYLENE DIAMINE AND NITRILOTRIACETIC ACID OR DERIVATIVE

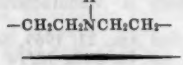
Norman B. Rainer, Richmond, Va., assignor to Seekay Chemical Company, Brooklyn, N.Y.

No Drawing. Filed Apr. 16, 1968, Ser. No. 721,585
Int. Cl. C08g 20/32
U.S. Cl. 260—72 4 Claims

A solute is removed from an aqueous solution by contacting said solution with a cross linked polymer containing recurring nitrogen atoms interconnected at each valence by radials of the formula



wherein *a* is 1 or 2 and X is a divalent radical selected from the group $-CH_2CH_2-$, $-CH_2CH_2OCH_2CH_2-$ and



3,580,892

PROCESS FOR POLYMERIZING CYCLOPENTENE

Peter Gunther, Opladen, Wolfgang Oberkirch, Cologne-Stammheim, and Gottfried Pampus, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 5, 1969, Ser. No. 874,399
Claims priority, application Germany, Dec. 3, 1968, P 18 12 338.1
Int. Cl. C08f 5/00
U.S. Cl. 260—93.1 8 Claims

A catalyst made from (1) a rhenium compound and (2) an aluminum organic compound polymerises cyclopentene to yield rubber-like products with high content of cis-linkages.

3,580,893

PROCESS FOR THE PREPARATION OF CYCLIC ACID ANHYDRIDES

William J. Heilman, Allison Park, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Continuation-in-part of application Ser. No. 594,347, Oct. 25, 1966. This application May 26, 1969, Ser. No. 828,001
Int. Cl. C08f 27/12
U.S. Cl. 260—78.5T 1 Claim

A process is defined for heating an organic compound containing at least one half-ester of a dicarboxylic acid where the carbonyl groups are directly connected to adjacent internal aliphatic carbon atoms to a temperature in excess of about 80° C. to convert the half-ester groups to cyclic anhydride groups and a by-product alcohol. The organic compound is a 1:1 copolymer of an aliphatic hydrocarbon having at least three carbon atoms, such as 1-hexene, and maleic anhydride. The organic compound prepared from an olefin having from three to ten carbon atoms can be precipitated as a solid from its homogeneous reaction medium by pouring the reaction solution into a monohydroxy alcohol having one to four carbon atoms, such as methanol. Some methyl half-ester forms can be removed by heating the separated solid product at a temperature in excess of 80° C. while removing the monohydroxy alcohol. Thus, 1-hexene-maleic anhydride copolymers free of half-ester groups can be recovered. If the organic compound contains both half-ester and diester groups, the resulting compound after heating to a temperature in excess of 80° C. will contain anhydride and diester linkages.

3,580,894

UNIQUE POLYMERS AND PROCESSES FOR PRODUCING SAME

Gerd M. Lenke, Dover, Del., assignor to Standard Brands Chemical Industries, Inc., Dover, Del.

No Drawing. Filed Jan. 30, 1968, Ser. No. 701,556
Int. Cl. C08f 27/06
U.S. Cl. 260—79.5 16 Claims

A unique class of phosphorus and sulfur-containing polymers comprising the reaction products of an unsaturated polymer and a hydrocarbyl phosphinodithioic acid and the processes for making them. These polymers are self-curing and many have superior adhesive properties.

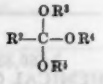
3,580,895

PRODUCTION OF COPOLYMERS IN THE PRESENCE OF AN ORGANOLITHIUM COMPOUND AND AN ORTHOESTER

Akira Onishi, Shiro Anzai, Koichi Irako, Ryota Fujio, Yoshihiro Hayakawa, and Shoji Miyamoto, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

No Drawing. Filed Dec. 3, 1968, Ser. No. 780,898
Claims priority, application Japan, Dec. 11, 1967, 42/79,057
Int. Cl. C08f 19/08; C08d 3/02
U.S. Cl. 260—83.7 21 Claims

Random copolymer is prepared by copolymerizing a conjugated diene, such as 1,3-butadiene and a vinyl-substituted aromatic hydrocarbon, such as styrene at a temperature of −80° to 150° C. in the presence of a substantially anhydrous liquid hydrocarbon by means of a catalyst system consisting essentially of an organolithium compound and an orthoester having the general formula



wherein, R^2 is hydrogen or a hydrocarbon radical and R^3, R^4 and R^5 are hydrocarbon radicals.

3,580,896

AQUEOUS SUSPENSION POLYMERIZATION OF VINYL HALIDE POLYMERS IN THE PRESENCE OF ACRYLIC ACID

Elliott Farber, Trenton, N.J., assignor to Tenneco Chemicals, Inc.

No Drawing. Filed Mar. 6, 1968, Ser. No. 710,758
Int. Cl. C08f 15/30, 15/08, 15/26
U.S. Cl. 260—87.1 8 Claims

Vinyl halide polymers are prepared in the form of uniform very small particles by incorporating in the monomer component of the polymerization mixture about 0.5

percent to 20 percent and preferably 1 percent to 10 percent by weight of acrylic acid, methacrylic acid, or mixtures thereof. Both the particle size and particle size distribution of vinyl halide homopolymers and copolymers with, for example, vinyl acetate, can be controlled in this way.

3,580,897

PROCESS FOR PRODUCING HYDROGENATED HYDROCARBON POLYMERS

Toshio Yoshimoto, Tsuneaki Narumiya, Seiya Kaneko, Hiroshi Yoshii, and Tetsuya Takamatsu, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

No Drawing. Filed Nov. 14, 1968, Ser. No. 775,922
Claims priority, application Japan, Nov. 27, 1967, 42/75,633
Int. Cl. C08d *5/02*; C08f *27/25*
U.S. Cl. 260—85.1 **12 Claims**

Hydrogenated hydrocarbon polymers can be obtained in a continuous step comprising polymerizing or copolymerizing conjugated 1,3-diolefin in an inert atmosphere and in an inert solvent by using a catalyst based on an alkali metal or an alkali metal hydrocarbyl to obtain a polymer solution and then mixing homogeneously an organic compound of nickel or cobalt soluble in the inert solvent with the resulting polymer solution without isolating the resulting polymer and catalytically hydrogenating the unsaturated bond of the resulting polymer. In this process the alkali metal or alkali metal hydrocarbyl in the polymerization catalyst, which remains in the resulting polymer after the polymerization acts to effect the reduction of the organic compound of nickel or cobalt to produce the hydrogenation catalyst.

3,580,898

VAPOR PHASE POLYMERIZATION OF BUTENE-1

Milton K. Rosen, Flemington, and Charles D. Mason, Florham Park, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed May 28, 1968, Ser. No. 732,528
Int. Cl. C08f *1/42, 3/12*
U.S. Cl. 260—93.7 **10 Claims**

Vapor phase polymerization of butene-1 using Ziegler-Natta stereoregulating catalyst with diethyl aluminum chloride as co-catalyst. Maintaining initial temperature less than about 26° C. affords powder or granular poly(butene-1) resin of high isotacticity, suitable for powder molding. After initial phase of polymerization (when sufficient polymer has been formed to fill at least about 10% of the reactor volume), temperature and pressure can be raised in order to increase reaction rate without causing agglomeration of product. Molecular weight of poly(butene-1) is controlled without affecting granularity by supplying hydrogen into the reaction medium.

3,580,899

POLYMERIZATION OF ISOPRENE

Jean-Marie Massoubre, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand, Puy-de-Dome, France

No Drawing. Filed May 10, 1967, Ser. No. 637,327
Claims priority, application France, May 16, 1966, 1,856; Feb. 10, 1967, 94,608
Int. Cl. C08d *3/10*
U.S. Cl. 260—94.3 **7 Claims**

A polymerization catalyst comprising a mixture of (1) a hydrocarbon solution of a complex of a diaryl ether, such as diphenyl ether, and a tetravalent titanium salt, such as titanium tetrachloride, and (2) a hydrocarbon solution of a trialkyl aluminum compound, such as triisobutyl aluminum; the catalyst desirably further containing a diene compound, such as butadiene or isoprene, and being useful in a process for the rapid polymerization of isoprene in high yield into high molecular weight polymers which can be free from gel.

3,580,900

WATER-SOLUBLE QUATERNARY AMINE CONTAINING MONOAZO DYESTUFFS

Eberhard Mundlos, Frankfurt am Main, Reinhard Mohr, Offenbach am Main, Gunther Trapp, Frankfurt am Main, and Kurt Hohmann, Offenbach am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Oct. 1, 1968, Ser. No. 764,304
Claims priority, application Germany, Oct. 21, 1967, P 16 44 230.1
Int. Cl. C07c *107/06*; C09b *45/22, 29/01*
U.S. Cl. 260—149 **6 Claims**

Water-soluble basic monoazo dyestuffs which are suitable for the dyeing or printing of textile fibrous materials consisting of native or regenerative cellulose, polyamides, polyesters, polyacrylonitrile or polyvinylidene cyanide.

3,580,901

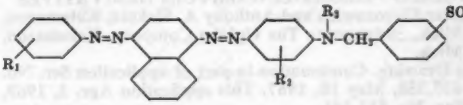
MAROON DISAZO DYES FOR POLYAMIDE FIBERS

James F. Feeman, Wyomissing, Pa., assignor to Crompton & Knowles Corporation, Worcester, Mass.

No Drawing. Filed Nov. 14, 1968, Ser. No. 775,950
Int. Cl. C09b *31/04*; D06p *1/02*
U.S. Cl. 260—191 **6 Claims**

Compounds that are useful as neutral dyeing dyes for polyamide fibers and dye such fibers in level, lightfast maroon shades.

The dyes have the structure:



wherein R_1 represents —H, —CH_3, —OCH_3 or —Cl; R_2 represents —H or —CH_3; R_3 represents lower alkyl having 1 to 4 C atoms and M represents —H, —Na, —K or —NH_4.

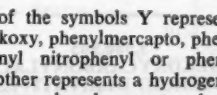
3,580,902

WATER-INSOLUBLE MONOAZO DYESTUFFS

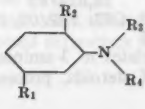
Hans-Joerg Angliker, Basel, Switzerland, assignor to Ciba Limited, Basel, Switzerland

No Drawing. Filed Oct. 4, 1967, Ser. No. 672,721
Claims priority, application Switzerland, Oct. 11, 1966, 14,691/66
Int. Cl. C09b *29/08, 29/36, 29/38*
U.S. Cl. 260—207 **4 Claims**

Water-insoluble mono-azo dyestuff of the formula



in which one of the symbols Y represents a phenoxy, phenyl-lower alkoxy, phenylmercapto, phenyl-lower alkylmercapto, phenyl nitrophenyl or phenyl-lower alkyl group and the other represents a hydrogen atom, a lower alkyl, lower alkoxy, phenylmercapto, phenyl-lower alkylmercapto phenyl or phenyl-lower alkyl group and B represents the radical of a coupling component selected from the group consisting of a pyrazolone, barbituric acid, 8-hydroxyquinoline and a compound of the formula



in which R_1 represents hydrogen, halogen, lower alkyl, lower alkoxy, lower alkanoylamino, phenoxy, phenylmercapto phenyl, R_2 represents hydrogen, lower alkyl or lower alkoxy, R_3 and R_4 each represents lower alkyl, cyano-lower alkyl, or lower alkanoyloxy-lower alkyl, dye polyester fibers yellow to red tints of excellent fastness to light and sublimation.

3,580,903

KETODEXTRAN COMPOUNDS

Anthony N. de Belder and Bernt J. Lindberg, Uppsala, Sweden, assignors to Pharmacia AB, Uppsala, Sweden

No Drawing. Filed Apr. 2, 1969, Ser. No. 812,848
Claims priority, application Sweden, Apr. 8, 1968, 4,696/68
Int. Cl. C08b *25/04*
U.S. Cl. 260—209D **2 Claims**

Derivative of dextran represented by the general formula:

$$A[CH(OH)]_{m-n}[CO]_n$$

wherein m represents the number of secondary alcohol groups in dextran having the formula $A[CH(OH)]_m$, and wherein n is a number chosen such that the degree of substitution n/m lies between 0.01 and 0.05, and wherein $[CH(OH)]_m$ represents the groups bearing the secondary alcohol groups of the dextran and A represents the remainder of the dextran. The dextran derivatives are very useful in intermediate products and may be reacted with a number of substances to form valuable and useful products. Such can be employed as a carrier for pharmaceuticals containing hydrazine and amino groups.

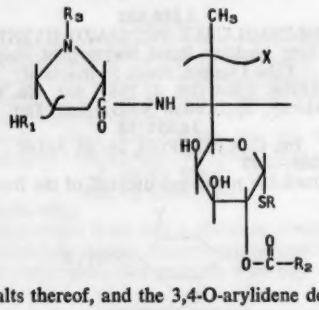
3,580,904

7-HALO-7-DEOXY-LINCOMYCIN DERIVATIVES

Walter Morozowich and Anthony A. Sinkula, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 637,358, May 10, 1967. This application Apr. 3, 1969, Ser. No. 813,341
The portion of the term of the patent subsequent to Feb. 4, 1986, has been disclaimed
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 **26 Claims**

Antibacterial compounds of the formula:



and the salts thereof, and the 3,4-O-arylidene derivatives.

3,580,905

3(AMINOALKOXYCARBONYLALKYLENE) STEROID DERIVATIVES

Ivor James Stewart Brown, Richard Clarkson, Neville Stanton Crossley, and Bernard Joseph McLoughlin, Macclesfield, England, assignors to Imperial Chemical Industries, Limited, London, England

No Drawing. Filed June 14, 1968, Ser. No. 736,951
Claims priority, application Great Britain, June 22, 1967, 28,824/67
Int. Cl. C07c *169/00, 173/00*
U.S. Cl. 260—210.5 **3 Claims**

The disclosure relates to 3-aminoalkoxycarbonylmethylene derivatives of steroids, processes for their manufacture, pharmaceutical compositions containing them and a method of using them to increase the force of contraction of the heart of warm-blooded animals. Representative of the steroid derivatives disclosed are 3-(2-dimethylaminoethoxycarbonylmethylene) - 17β - (β - D - glucopyranosyloxy) - 5α - androstane and the tetra-O-acetate thereof.

3,580,906

STARCH LEVULINATES

Edward Bernasek, Winston-Salem, N.C., and Calley Neil Eaton, New York, N.Y., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

No Drawing. Filed Sept. 25, 1968, Ser. No. 762,645
Int. Cl. C08b *19/02*
U.S. Cl. 260—233.5 **5 Claims**

Levulinate esters of starch are prepared by reacting starch with alpha-angelica lactone under controlled conditions of temperature and pH. The resulting starch levulinates may be used in food, cosmetic, adhesive, and paper and textile sizing applications, etc.

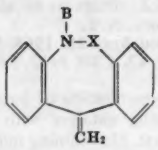
3,580,907

MORPHANTHRIDINE DERIVATIVES

Max Thiel and Kurt Stach, Mannheim, Wolfgang Schaumann, Mannheim-Waldhof, and Annemarie Ribbentrop, Mannheim, Germany, assignors to Boehringer Mannheim Gesellschaft mit beschrankter Haftung

No Drawing. Filed Jan. 24, 1967, Ser. No. 611,240
Claims priority, application Germany, Feb. 18, 1966, B 85,866
Int. Cl. C07d *41/04, 41/06*
U.S. Cl. 260—239 **16 Claims**

Morphanthridine derivatives of the formula



wherein B is H or the group —A—Am, wherein Am is a secondary amino group, A is a straight or branched chain alkylene group and X is a methylene or carbonyl group. The pharmacologically acceptable salts of the compounds wherein B is —A—Am are also within the scope of the invention as are the pharmaceutical compositions containing the latter compounds and the method of using the same. The morphanthridine derivatives possess psychodynamic properties, being particularly adapted for use as antidepressive agents.

3,580,908

PROCESS FOR THE CONVERSION OF α-CARBOARYLOXYBENZYLPENICILLINS TO α-CARBOXYBENZYLPENICILLINS

Kenneth Butler, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Oct. 17, 1968, Ser. No. 768,548
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 **6 Claims**

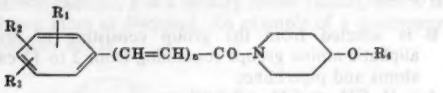
The controlled hydrolysis of α-carbobenzyloxybenzylpenicillin and α-carboaryloxybenzylpenicillins, such as α-carbophenoxybenzylpenicillin, under alkaline conditions to α-carboxybenzylpenicillin salts.

3,580,909
4-STYRYLPYRIDINES
Hanns Hanina Lehr, Montclair, N.J., assignor to Hoffmann-La Roche, Inc., Nutley, N.J.
No Drawing. Filed Dec. 9, 1968, Ser. No. 782,412
Int. Cl. C07d *31/20, 31/24*
U.S. Cl. 260—240 12 Claims

4-styrylpyridines, prepared by reacting appropriately substituted pyridines and aromatic aldehydes, are described. The end products are useful as anticonvulsants.

3,580,910
p-ALKOXY-PIPERIDINE-AMIDES
Max Thiel, Mannheim, Wolfgang Kampe, Heddesheim, Kurt Stach and Wolfgang Schaumann, Mannheim-Waldhof, and Annemarie Ribbentrop, Mannheim, Germany, assignors to Boehringer Mannheim Gesellschaft mit beschrankter Haftung
No Drawing. Filed Jan. 18, 1968, Ser. No. 698,701
Claims priority, application Germany, Jan. 25, 1967, B 90,888
Int. Cl. C07d *29/18*
U.S. Cl. 260—240 3 Claims

A series of novel p-alkoxy-piperidine-amides having the formula:



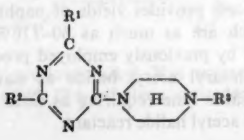
wherein R_1, R_2 and R_3 are each hydrogen, halogen, hydroxyl, alkoxy, alkyl or trifluoromethyl, R_4 is lower alkyl, and n is 0 or 1, constituting useful chemotherapeutic agents particularly because of their anticonvulsive, tranquilizing and sedative actions.

3,580,911
PHOTOGRAPHIC MATERIALS
John D. Mee and Donald W. Heseltine, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Application July 22, 1968, Ser. No. 746,260, now Patent No. 3,501,312, dated Mar. 17, 1970, which is a continuation-in-part of application Ser. No. 609,792, Jan. 17, 1967. Divided and this application Aug. 5, 1969, Ser. No. 870,922
Int. Cl. C09b *23/06*
U.S. Cl. 260—240.65 4 Claims

Trimethine cyanine dyes are provided which contain a 3-indole nucleus which contains either a fused aromatic ring, an alkylene bridge or a 2-heterocyclic substituent.

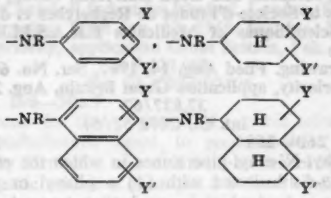
3,580,912
BIOLOGICALLY ACTIVE SUBSTITUTED-S-TRIAZINES
Werner Heimberger and Hermann Schmitt, Hanau am Main, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
No Drawing. Filed Nov. 30, 1967, Ser. No. 686,790
Claims priority, application Germany, Dec. 3, 1966, D 51,705
Int. Cl. C07d *55/22*
U.S. Cl. 260—247.5R 5 Claims

Substituted-s-triazines having anti-inflammatory action of the formula



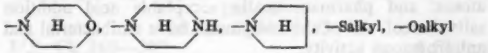
I

in which R^1 is —NRAlky,

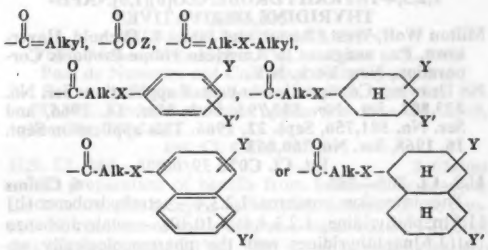


wherein

alkyl is alkyl or alkyl substituted with CN or cl;
R has the same significance as alkyl but in addition can be hydrogen;
each of Y and Y′ are hydrogen, halogen, NO_2, —alkyl, —Oalkyl, OH or COOH;
R^2 is



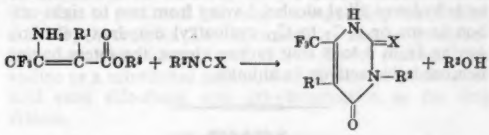
R^3 is



in which X is O or S, Z is alkyl, phenyl, naphthyl or cyclohexyl, Alk is alkylene and the alkyl and alkylene included in R, R^1 to R^3 and Z having up to 6 carbon atoms and their pharmocologically acceptable acid addition salts.

3,580,913
PROCESS FOR PREPARING SUBSTITUTED-6-TRIFLUOROMETHYLURACILS
Albert William Lutz, Princeton, N.J., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed June 17, 1968, Ser. No. 737,288
Int. Cl. C07d *51/30, 51/32*
U.S. Cl. 260—260 7 Claims

Herbicidal uracils are prepared in accordance with the following equation:



The single step reaction is carried out in the presence of a solvent and an alkali metal hydride or alkali metal alkoxide.

In the above equation:

R^1 is hydrogen or lower alkyl,
R^2 is alkyl, alkenyl, cycloalkyl, phenyl, benzyl, or specific mono and disubstituted derivatives thereof,
R^3 is lower alkyl, and
X is oxygen or sulfur.

3,580,914

DERIVATIVES OF N-METHYLPIPERAZINE

Andrea Pedrazzoli and Leon Dall'Asta, Milan, Italy, assignors to Societe d'Etudes de Recherches et d'Application Scientifiques et Medicales E.R.A.S.M.E., Paris, France

No Drawing. Filed Aug. 14, 1967, Ser. No. 660,227
Claims priority, application Great Britain, Aug. 23, 1966, 37,827/67
Int. Cl. C07d *51/64*
U.S. Cl. 260—268 2 Claims

N-methyl-N'-ethyl-piperazines in which the ethyl radical is β,β-disubstituted with (1) a phenyl or phenoxymethylene radical which is unsubstituted or substituted in the ring with straight or branched aliphatic chains having 4 to 12 carbon atoms or cycloalkyl groups having 5 to 6 carbon atoms or with 2 or 3 chlorine atoms or with 2 chlorine atoms and a nitro group, and (2) a benzoyloxy or phenoxyacetyloxy radical which is unsubstituted or substituted in the ring with 1, 2 or 3 chlorine atoms or with 2 chlorine atoms and a nitro group or a benzyloxy radical substituted in the ring with 1, 2 or 3 chlorine atoms; and pharmaceutically acceptable acid addition salts thereof. All of the compounds have antibacterial and antiprotozoan activity.

3,580,915

1,2,3,4-TETRAHYDROBENZO[b][1,6]NAPHTHYRIDINE DERIVATIVES

Milton Wolf, West Chester, and James L. Diebold, Havertown, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 533,802, Ser. No. 533,793, both Mar. 14, 1966, and Ser. No. 581,756, Sept. 22, 1966. This application Sept. 16, 1968, Ser. No. 760,063
Int. Cl. C07d *39/00*
U.S. Cl. 260—286 6 Claims

This invention concerns 1,2,3,4 - tetrahydrobenzo[b][1,6]naphthyridine, 1,2,3,4,4a,5,10,10a - octahydrobenzo[b][1,6]naphthyridines and the pharmacologically acceptable acid addition salts thereof which are pharmacologically active as central nervous system depressants which are useful in producing a calming effect in warm-blooded animals. Further, this invention concerns a process for the preparation of 10 - amino - 1,2,3,4 - tetrahydrobenzo[b][1,6]naphthyridines.

3,580,916

HYDROXYESTERS OF HEXA- AND OCTAHYDROINDOLOQUINOLINES

William L. Garbrecht, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Feb. 20, 1969, Ser. No. 801,144
Int. Cl. C07d *43/20*
U.S. Cl. 260—285.5 13 Claims

Esters of lysergic and dihydrolysergic acids, including 4-alkyl, 4-alkenyl and 4-aralkyl derivatives thereof, in which the esterifying group is derived from a dihydroxy or trihydroxy alkyl alcohol having from two to eight carbon atoms or a C_5 to C_{11} cycloalkyl dihydroxy alcohol, having from 5 to 8 ring carbon atoms, the esters having neurosedative activity in animals.

3,580,917

PROCESS FOR PRODUCING PYRIDINE BASES

Yoshiaki Numa and Akio Nakamachi, Saitama, and Yasukazu Murakami, Kawasaki-shi, Kanagawa, Japan, assignors to Daicel Ltd., Osaka, Japan

No Drawing. Filed June 13, 1968, Ser. No. 736,560
Claims priority, application Japan, June 14, 1967, 42/37,595
Int. Cl. C07d *31/02*
U.S. Cl. 260—290 6 Claims

A process for producing β-picoline and pyridine in which a gaseous mixture of acrolein and propylene oxide are reacted with ammonia in the gas phase at an elevated temperature in the presence of a solid acid catalyst so that β-picoline and pyridine are produced at a high yield and without producing γ-picoline.

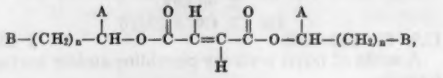
3,580,918

METHOD FOR THE PREPARATION OF AMINOALKYL FUMARATES

Frizian Nikolaevich Bodnarjuk and Mikhail Alexeevich Korshunov, Yaroslavl, U.S.S.R., assignors to Nauchno-Issledovatelsky Institut Monomerov Dlya Sinteticheskogo, Yaroslavl, U.S.S.R.

No Drawing. Filed Sept. 3, 1968, Ser. No. 757,122
Int. Cl. C07c *101/00*
U.S. Cl. 260—294.3 3 Claims

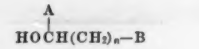
Aminoalkyl fumarates having the following formula:



wherein:

B is selected from the group consisting of tertiary aliphatic amino groups containing from 2 to 12 carbon atoms and piperidino;
A is H, CH_3 or CH_2—B, and
n is an integer of 1 to 2,

are produced by reacting maleic anhydride and amino alcohols having the general formula



at reflux temperature in the presence of an esterification catalyst and an inert solvent while bubbling nitrogen through the reaction mixture and continuously distilling off the water formed in the course of the reaction in the form of an azeotrope with the solvent. The aminoalkyl fumarates may be copolymerized with other vinyl type monomers to incorporate polar amino groups into polymer molecules to improve the characteristics of colorability, adhesion to various materials, resistance to temperature shocks and antistatic properties.

3,580,919

PROCESS FOR PREPARATION OF NAPHTHYRIDINE DIONE DYESTUFFS

Walter R. Demler, Hamburg, and Arthur F. Jachlewski, Buffalo, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Apr. 30, 1968, Ser. No. 725,481
Int. Cl. C07d *31/44*
U.S. Cl. 260—295 18 Claims

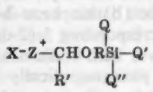
An improved process for preparing water-insoluble dyes of the naphthyridine dione series by reaction of an indigo with an aryl acetyl halide in the presence of an inorganic acid halide preferably a thionyl halide and an aroyl halide, said indigo, aryl acetyl halide and aroyl halide being free of water-solubilizing substituents. The improved process provides yields of naphthyridine dione dyestuffs which are as much as 60–110% greater than those realized by previously employed processes using an indigo and an aryl acetyl halide as starting materials while at the same time requiring as little as 30–75% of the costly aryl acetyl halide reactant.

3,580,920
CERTAIN PYRIDINIUM HALOETHER SILANES AND DERIVATIVES

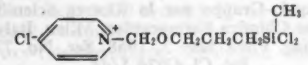
Alan L. Culpepper, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Continuation of application Ser. No. 641,713, Mar. 2, 1967, which is a division of application Ser. No. 314,879, Oct. 9, 1963. This application Apr. 14, 1970, Ser. No. 28,189
Int. Cl. C07d *31/28*
U.S. Cl. 260—297 5 Claims

Quaternary ammonium salts of the formula



where Q, Q′ and Q″ are hydrogen, halogen, hydroxyl, monovalent hydrocarbon and halohydrocarbon radicals that are free of aliphatic unsaturation, $\overline{R}O-$, $\overline{R}COO-$, $\overline{R}_2C{=}N{-}O$, $\overline{R}{=}C{=}N{-}O-$ or $R''O(CH_2CH_2O)_m-$, $\overline{R}$ is hydrocarbon or halohydrocarbon radicals, R″ is an alkyl, *m* is 1 or 2, R is divalent aliphatic or cycloaliphatic hydrocarbon radicals, R′ is hydrogen or monovalent hydrocarbon radicals, Z is a tertiary amine radical, and X is a halogen atom as disclosed. An example of a quaternary ammonium salt is



The quaternary ammonium salts are useful as water repellents and as intermediates in making siloxanes which are useful as water repellents especially for cellulosic fabrics.

3,580,921
HETEROCYCLIC MESOIONIC COMPOUNDS

Donald P. Cameron, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Sept. 20, 1968, Ser. No. 761,319
Int. Cl. C07d *91/54*
U.S. Cl. 260—302 12 Claims

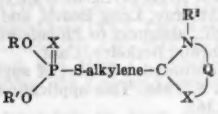
A series of novel aryl anhydro 1,2,3-thiadiazolium hydroxide bases and their acid addition salts have been prepared. The anhydro 4-hydroxy-3-(2-substituted phenyl)-1,2,3-thiadiazolium hydroxides produced are all active monoamine oxidase inhibitors and are useful in therapy as non-steroidal anti-inflamatory agents.

3,580,922
PHOSPHORYLATED HETEROCYCLIC COMPOUNDS

Glenn R. Price and Edward N. Walsh, Chicago Heights, Ill., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Dec. 28, 1964, Ser. No. 421,609
Int. Cl. C07f *9/08, 9/16*
U.S. Cl. 260—304 6 Claims

Heterocyclic compounds containing thiophosphatoalkyl groups, useful as herbicides, having formula



where R and R′ are lower alkyl, X is oxygen or sulfur, R^2 is H or lower alkyl, Q is ethylene, propylene, or phenylene.

3,580,923
RESOLUTION PROCESS

Thomas Leigh, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Jan. 22, 1969, Ser. No. 793,157
Claims priority, application Great Britain, Feb. 14, 1968, 7,321/68
Int. Cl. C07d *99/06*
U.S. Cl. 260—306.7 4 Claims

A process for the resolution of racemic tetramisole, a known anthelmintic agent, to produce the (−)-tetramisole, by formation of a salt with an arenesulphonyl-L-pyroglutamic acid or a di-aroyl-(+)-tartaric acid.

3,580,924
2-DIPHENYLBENZOXAZOLES

Rudolf Anliker, Binningen, Max Duennenberger, Frenkendorf, Karl Schmid, Reinach, Basel-Land, and Adolf Emil Siegrist, Basel, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed Dec. 27, 1966, Ser. No. 604,584
Claims priority, application Switzerland, Jan. 7, 1966, 196/66
Int. Cl. C07d *85/48*
U.S. Cl. 260—307 4 Claims

2-(diphenyl)-benzoxazoles useful as scintillator substances.

3,580,925
IMIDAZOLE PREPARATION

Philip Manos, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application May 23, 1966, Ser. No. 551,872. Divided and this application Dec. 26, 1968, Ser. No. 787,248
Int. Cl. C07d *49/00*
U.S. Cl. 260—309 3 Claims

The preparation of benzils from benzoins by reacting the benzoin with a cupric carboxylate catalyst in the presence of a solvent of acetic acid or a water-miscible alcohol at a temperature of 20° to 130° C. while passing oxygen into the reaction mixture. The preparation of imidazoles from benzils by adding, to the reaction mixture in the preceding sentence, ammonia or a weak acid salt thereof and a benzaldehyde.

3,580,926
CARBAZOLE-4-ALKANOIC ACIDS AND TETRAHYDROCARBAZOLE-4-ALKANOIC ACIDS

Franklin W. Short, Saline, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

No Drawing. Filed Nov. 10, 1969, Ser. No. 875,559
Int. Cl. C07d *27/68*
U.S. Cl. 260—315 5 Claims

9-phenylcarbazole-4-acetic acid and 5,6,7,8-tetrahydro-9-phenylcarbazole-4-acetic acid; o-fluoro, o-chloro, and α-methyl derivatives; and carboxylate salts of the foregoing compounds. The products are anti-inflammatory agents useful in relieving or preventing inflammation. They can be produced from the corresponding lower alkyl esters by hydrolysis. The intermediates can be produced from hexahydrodibenzofuran-1(2H)-one by reaction with aniline or a substituted aniline, introduction of an alkanoic acid ester side-chain, and dehydrogenation in the ring system.

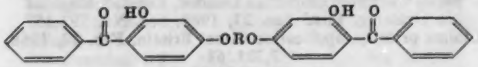
3,580,927
ULTRAVIOLET LIGHT INHIBITORS

Robert L. Wear, West St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Nov. 24, 1967, Ser. No. 685,329
Int. Cl. C07d *3/00;* C07c *49/82*
U.S. Cl. 260—333 3 Claims

Ultraviolet light absorbers with extremely low volatility are prepared by reacting 2,4-dihydroxybenzophenone and

organic dihalides or diepoxides. The resultant compounds have the general formula



where R is a divalent organic radical. These compounds may be used as carriers for dye, permitting the internal coloring of polyester films and fibers.

3,580,928

PROCESS FOR PURIFYING ACETALS

Francis B. McAndrew, Springfield, Martin B. Price, Berkeley Heights, and Frank M. Berardinelli, South Orange, N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Feb. 12, 1968, Ser. No. 704,905
Int. Cl. C07c *43/30*; C07d *13/02, 15/04, 17/00, 19/00*
U.S. Cl. 260—340 5 Claims

Acetals such as trioxane which contain impurities are purified by contacting them in the vapor state with liquid sodium in order to react the impurities with the liquid sodium whereby the impurities precipitate out as solids. The resulting purified acetal is separately recovered.

3,580,929

PROCESS FOR RECOVERING FERMENTATION ESTROGENIC SUBSTANCE

Phil H. Hidy and Vernon V. Young, Terre Haute, Ind., assignors to Commercial Solvents Corporation

No Drawing. Continuation-in-part of application Ser. No. 670,393, Sept. 25, 1967. This application Apr. 16, 1968, Ser. No. 721,604
Int. Cl. C07d *9/00*
U.S. Cl. 260—343.2 19 Claims

A process for the recovery of a fermentation product from a porous substrate such as recovery of the anabolic and estrogenic substance known at F.E.S., identified in U.S. Pat .No. 3,196,019, produced by cultivation of the microorganism *Gibberella zeae* (Gordon) on a porous substrate, especially from a synthetic fermentation medium which includes exfoliated vermiculite as a support for the microorganism and a nutrient production medium including sugar as the carbohydrate source and added minerals desired for proper growth of the microorganism. In this recovery process the porous substrate or fermentation cake is crushed and slurried with an aqueous alkaline solution to dissolve the normally water-insoluble F.E.S. The solution is then filtered and acidified to precipitate the F.E.S. which is recovered. The solution is heated prior to or during acidification to insure the production of easily filterable F.E.S. crystals.

3,580,930

PROCESS FOR PRODUCING GAMMA-BUTYROLACTONE

Bunji Miya, Fumiro Hoshino, and Morio Matuda, Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Filed Dec. 27, 1967, Ser. No. 693,744
Claims priority, application Japan, Dec. 29, 1966, 42/453
Int. Cl. C07d *5/06*
U.S. Cl. 260—343.6 6 Claims

A process for producing gamma-butyrolactone by hydrogenating maleic anhydride, maleic acid, fumaric acid, succinic anhydride or succinic acid or mixtures thereof, in the gas phase, in the presence of a Zn-Cu-Cr catalyst, in order to produce high yields of gamma-butyrolactone and minimize the formation of by-products.

3,580,931

5-(2-METHYLENEALKANOYL)-BENZOFURAN 7-CARBOXYLIC ACIDS

Janos Zergenyi, Riehen, and Ernst Habicht, Oberwil, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Filed July 22, 1968, Ser. No. 746,262
Claims priority, application Switzerland, July 28, 1967, 10,764; Sept. 29, 1967, 13,637
Int. Cl. C07d *5/42*
U.S. Cl. 260—346.2 10 Claims

The production of 5-(2-methylene-alkanoyl)-benzofuran-, 5-(2-methylene-alkanoyl)-indole- and 5-(2-methylene-alkanoyl)-benzol[b]thiophene-2-carboxylic acids by reaction of the corresponding 5-(2-dimethylaminomethyl-alkanoyl)-derivatives with sodium acetate in glacial acetic acid and their pharmaceutically acceptable salts with bases, a method of producing a diuretic and saluretic effect in mammals comprising administering said compounds to said mammals and pharmaceutical compositions containing said compounds are described. A typical embodiment is 5-(2-methylene-butyryl)-6-methyl-benzofuran-2-carboxylic acid.

3,580,932

PHARMACOLOGICALLY ACTIVE DIETHYL-(2-DIBENZOFURANYL)-MALONATE

Bruno Cavalleri, Milan, and Elvio Bellasio, Albate, Italy, and Emilio Testa, Ticino, Switzerland, assignors to Lepetit S.p.A.-Gruppo per la Ricerca Scientifica e la Produzione Chimica Farmacettica, Milan, Italy

No Drawing. Filed May 3, 1968, Ser. No. 726,556
Int. Cl. C07d *5/44*
U.S. Cl. 260—346.2 1 Claim

The invention is concerned with diethyl α-(2-dibenzofuranyl)-malonate, a substance with high antiinflammatory activity. A method for the preparation of the new compound is also described.

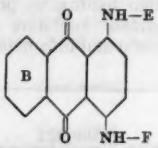
3,580,933

ANTHRAQUINONE DYES, THEIR PRODUCTION AND USE

Jacques Guenthard, Binningen, Basel-Land, Switzerland, assignor to Sandoz Ltd. (also known as Sandoz A.G.), Basel, Switzerland

No Drawing. Filed Aug. 18, 1967, Ser. No. 661,551
Int. Cl. C09b *1/30, 1/50*
U.S. Cl. 260—372 22 Claims

Anthraquinone dyes of the formula



wherein:

E represents a sulfonated carboarylamido-alkylene group, F represents E or an alkyl- or cycloalkyl radical, and the ring B may bear further substituents.

3,580,934

CORROSION PREVENTION WITH SODIUM SILICATE AND SOLUBLE ZINC SALTS

William Bruce Murray, Long Beach, and Roy E. Wright, Oakland, Calif., assignors to Philadelphia Quartz Company of California, Berkeley, Calif.

No Drawing. Continuation-in-part of application Ser. No. 584,373, Oct. 5, 1966. This application Nov. 26, 1969, Ser. No. 880,365
Int. Cl. C23f *11/18*
U.S. Cl. 252—389 9 Claims

A process for retarding corrosion in metal tubes carrying water by treating said tubes with a combination of

sodium silicate and a soluble zinc salt, and with the optional addition of a chelating or sequestering agent.

3,580,935

PROCESS FOR THE PREPARATION OF 3-ENOL ETHERS OF 3-KETO-Δ^4 - 6-(N-DISUBSTITUTED) AMINOMETHYL STEROIDS

Verlan H. VanRheenen, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,247
Int. Cl. C07c *169/00*
U.S. Cl. 260—397.1 **7 Claims**

This invention relates to a novel and general process for the conversion of the 3-enol ethers of 3-keto-Δ^4-steroids, unsubstituted at the 4 and 6 positions, of the androstane, 19-norandrostane, pregnane, 19-norpregnane and spirostane series (1), into the corresponding 6-(N-disubstituted)aminomethyl derivatives (III). The compounds III have anabolic, androgenic, anti-fertility, anti-inflammatory and estrogenic activities, and are consequently useful in treating mammals, including humans, birds and other animals in those conditions and/or ailments where such activities are desired. The compounds of Formula III are additionally useful as intermediates in the preparation, by known methods, of the physiologically active and therapeutically useful 6-methyl steroids, such as medroxyprogesterone acetate (α-methyl-17α-hydroxy-4-pregnene - 3,20 - dione 17-acetate), dimethisterone [6α - methyl-17β-hydroxy-17α-(1-propynyl)-4-androsten-3-one], methylprednisolone (6α-methyl-11β,17α, 21-trihydroxy-1,4-pregnadiene-3,20-dione), fluoromethylone (6α-methyl-9α-fluoro-11β,17α-dihydroxy - 1,4 - pregnadiene-3,20-dione), etc.

3,580,936

5β-TAUROCHOLENIC ACIDS AND 5β-TAUROCHOLADIENIC ACIDS

Arthur A. Patchett, Cranford, and John Hannah, Matawan, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 677,080, Oct. 23, 1967. This application Oct. 2, 1968, Ser. No. 764,650
Int. Cl. C07c *169/54*
U.S. Cl. 260—397 **42 Claims**

5β-taurocholenic acids wherein the double bond may be either in the 22-position of the aliphatic chain or within the cholane ring; and 5β-taurocholadienic acids wherein one double bond is in the 22-position of the chain and the second is within the cholane nucleus; and the salts, esters and amide derivatives thereof. The instant products may be obtained: (1) via the reaction of a 5β-cholenic acid or 5β-choladienic acid with an alkyl haloformate in the presence of a base to afford a 5β-cholenic alkylcarbonic anhydride or 5β-choladienic alkylcarbonic anhydride, which intermediate is then treated with taurine in a basic medium to yield the desired 5β-taurocholenic acid salt or 5β-taurocholadienic acid salt; or (2) by the reaction of the acid halide of cholenic acid with either taurine or with a suitable taurine salt in the presence of a base. The products are hypocholesterolemics and hypolipemics which have utility in the treatment of conditions associated with blood lipid deposition.

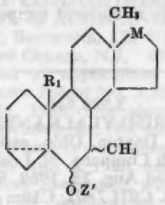
3,580,937

7α- AND 7β-METHYL-3α,5α-CYCLOANDROSTANES, 6-METHYL DERIVATIVES THEREOF AND THE 19-NOR ANALOGUES OF THE FOREGOING

J. Allen Campbell and John C. Babcock, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

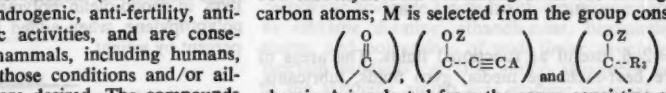
No Drawing. Filed July 29, 1969, Ser. No. 845,877
Int. Cl. C07c *169/20*
U.S. Cl. 260—397.4 **10 Claims**

This invention relates to novel 7α- and 7β- methyl-3α,5α-cycloandrostanes and their 19-nor analogues embraced by the formula



II

wherein $\int$ is a generic expression denoting α- and β- bonds and mixtures thereof; R_1 is selected from the group consisting of hydrogen and methyl; Z' is selected from the group consisting of hydrogen, alkyl of from one through twelve carbon atoms and the acyl radical of a hydrocarbon carboxylic acid containing from one through twelve carbon atoms; M is selected from the group consisting of



wherein A is selected from the group consisting of hydrogen, alkyl of from one through four carbon atoms, chlorine, bromine, and trifluoromethyl; R_3 is selected from the group consisting of hydrogen, alkyl of from one through twelve carbon atoms and alkenyl of from two through twelve carbon atoms; Z is selected from the group consisting of hydrogen and the acyl radical of a hydrocarbon carboxylic acid containing from one through twelve carbon atoms. These compounds (III) have anti-fertility, hypocholesteremic, anabolic, estrogenic, antihormonal and central nervous system depressing activities. They are consequently useful in treating mammals, including humans, and birds in those conditions where the foregoing properties make the new compounds valuable in medical and veterinary practice. These compounds are additionally useful as intermediates in the preparation of the corresponding rearranged 3-hydroxy and 3-acyloxy-Δ^5-7-methyl steroids (e.g., those prepared and claimed in U.S. Pat. 3,380,886) wherein R_1 and M are the same as given above for the compounds of Formula III. The aforesaid Δ^5-steroids are highly potent estrogen, anti-fertility and cholesterol-lowering agents.

3,580,938

PREPARATION OF DIALKYL GROUP IIIa METAL-DIACYLMETHANE

Wolfram R. Kroll, Linden, N.J., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 584,964, Oct. 7, 1966. This application Aug. 29, 1968, Ser. No. 756,282
Int. Cl. C07f *5/00, 5/04, 5/06*
U.S. Cl. 260—448A **34 Claims**

Substantially pure dialkyl metal diacylmethanes such as dialkylaluminum acetylacetonates having excellent catalytic properties can be obtained for the first time in such a high state of purity by reacting stoichiometrically certain Group III metal-tris-diacylmethanes such as aluminum-tris-acetylacetonate with a trialkyl metal such as trialkylaluminum.

3,580,939

AMINOSILANES AND COMPOSITIONS CONTAINING THEM

Louis Ceyzeriat, Lyon, and Maurice Gaignon and Marcel Lefort, Rhone, France, assignors to Rhone-Poulenc S.A., Paris, France

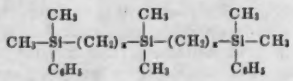
No Drawing. Filed Apr. 22, 1968, Ser. No. 723,250
Claims priority, application France, May 9, 1967, 105,751
Int. Cl. C07f *7/10*
U.S. Cl. 260—448.2N **2 Claims**

The invention provides new trisaminosilanes containing a 2,2 - dichlorocyclopropyl group and organopoly-

siloxane compositions containing the same as cross-linking agents which are storage-stable in the absence of moisture but cure rapidly at ambient temperature in the presence of moisture.

3,580,940
TRISILYLALKANES
James A. Webster, Dayton, Ohio, assignor to Monsanto Research Company, St. Louis, Mo.
No Drawing. Filed Aug. 25, 1969, Ser. No. 852,869
Int. Cl. C07f 7/02; C10m 1/50
U.S. Cl. 260—448.2 **2 Claims**

Trisilaalkanes of the formula



where x=2–6, useful as functional fluids. The areas of utility are heat-exchange media, gyro fluids, lubricants, anti-corrosive agents and viscosity-index improvers.

3,580,941
AMINOCYCLOTETRASILOZANES
Christopher A. Pearce and Norman C. Lloyd, Glamorgan, Wales, assignors to Midland Silicones Limited, Reading, England
No Drawing. Original application May 21, 1968, Ser. No. 730,940, now Patent No. 3,518,290, dated June 30, 1970. Divided and this application Feb. 19, 1970, Ser. No. 12,836
Claims priority, application Great Britain, May 26, 1967, 24,693/67
Int. Cl. C07f 7/02
U.S. Cl. 260—448.2 **3 Claims**

Novel compositions of matter and processes for preparing bicyclo- and aminocyclotetrasilazanes. The aminocyclotetrasilazanes are used to form bicyclotetrasilazanes by heating at temperatures above 210° C. under substantially anhydrous conditions.

3,580,942
CHLOROSULPHONYL-TERT.-BUTYLISOCYANATE AND ITS PREPARATION
Dieter Arlt, Cologne-Buchheim, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed June 18, 1968, Ser. No. 737,859
Claims priority, application Germany, June 21, 1967, F 52,748
Int. Cl. C07c 119/04
U.S. Cl. 260—453 **2 Claims**

2 - isocyanato - 2,2 - dimethyl-ethane-sulphonic acid chloride is prepared by reacting isobutylene and cyanogen chloride with chlorosulphonic acid or sulphur trioxide. This compound is suitable for the modification of polyurethanes, for reaction with reactive hydrogen containing compounds and it is particularly useful as a cross linking agent for photo lacquers.

3,580,943
DIBENZOCYCLOHEPTENE DERIVATIVES
Donald L. Trepanier, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Sept. 3, 1968, Ser. No. 757,106
Int. Cl. C07c 121/64, 153/05, 159/00
U.S. Cl. 260—453 **6 Claims**

Dibenzocycloheptene derivatives such as methylthio 10,11 - dihydro - 5H - dibenzo(a,d)cycloheptene-$\Delta^{5,7}$-butyrimidate and the hydrohalide salts thereof such as the hydroiodide and hydrobromide salts. The compounds are useful in the study of animal behavior and are particularly useful as central nervous system antidepressants and as agents for controlling the appetite of animals.

3,580,944
UNSATURATED ALKYL SULFAMATES AND METHOD OF PREPARATION
Robert W. Hill, Leawood, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Aug. 28, 1967, Ser. No. 663,568
Int. Cl. C07c 143/68; C08f 45/46
U.S. Cl. 260—456 **4 Claims**

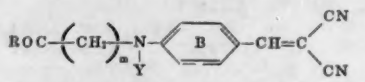
Alkenyl sulfamates having 10 to 22 carbon atoms, such as erucyl sulfamate and oleyl sulfamate, are prepared by refluxing the correspond alkenol with sulfamide in a suitable solvent, such as dioxane, until evolution of ammonia ceases. These alkenyl sulfamates are useful as slip additives in mono-olefin polymers, such as polyethylene or polypropylene, when added in amounts from 0.005 to 1 percent by weight.

3,580,945
DERIVATIVES OF 2-OXOCYCLOPENTANE CARBOXYLIC ACID
Real Laliberte, Laval, Quebec, Canada, assignor to Ayerst, McKenna & Harrison, Ltd., St. Laurent, Quebec, Canada
No Drawing. Filed Mar. 21, 1969, Ser. No. 809,412
Int. Cl. C07c 121/46
U.S. Cl. 260—464 **3 Claims**

Lower alkyl esters of 2-oxocyclopentane carboxylic acid cyanoacethydrazone, prepared from the corresponding lower alkyl ester of 2-oxocyclopentane carboxylic acid and cyanoacethydrazide. The compounds are useful as anti-parasitic agents.

3,580,946
CYANO CONTAINING STYRYL DYESTUFFS
Kenneth Anderton, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Dec. 13, 1968, Ser. No. 783,767
Claims priority, application Great Britain, Dec. 29, 1967, 44,095/67; Sept. 17, 1968, 59,093/68
Int. Cl. C07c 121/50
U.S. Cl. 260—465 **1 Claim**

Water-insoluble styryl dyestuffs of the formula:

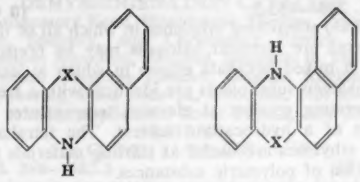


wherein R is —OR^1 or —NR^2R^3, R^1 is an optionally substituted hydrocarbon radical, R^2 and R^3 are independently hydrogen or optionally substituted hydrocarbon, Y is hydrogen or alkyl, the benzene ring B may contain substituents, and m is 2 or 3; and the use of the said dyestuffs for colouring synthetic textile materials.

3,580,947
METHOD OF RETARDING POLYMERIZATION IN THE PROCESS FOR THE PRODUCTION OF METHACRYLIC ACID ESTERS
Masashi Ikeda and Masayoshi Inoue, Ohtake-shi, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan
No Drawing. Filed Oct. 26, 1967, Ser. No. 678,207
Claims priority, application Japan, Oct. 26, 1966, 41/70,254
Int. Cl. C07c 69/54
U.S. Cl. 260—486R **9 Claims**

A method of retarding polymerization in the process for the production of methacrylic acid esters by the re-

action of acetone cyanhydrin or methacrylonitrile with sulfuric acid or fuming sulfuric acid and alcohol, said method being characterized by using as a polymerization-retarder a compound having in its molecular structure an organic ring system represented by



wherein X stands for sulfur, oxygen or nitrogen atom.

3,580,948

1,1-DICHLORO-1-NITROETHANE DERIVATIVES

Leo R. Morris, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 1, 1968, Ser. No. 749,317
Int. Cl. C07c *69/22, 79/12*
U.S. Cl. 260—487 **4 Claims**

Disclosed are, as new compounds, α-(2,2-dichloro-2-nitroethyl)styrene, (1,3,3-trichloro-3-nitropropyl)benzene, and lower alkyl 2,4,4-trichloro-2-methyl-4-nitrobutyrates which are useful as pesticides.

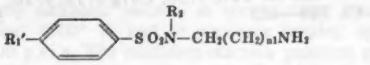
3,580,949

N,N'-BIS-(AMINOALKYL)-BENZYL-AMINES

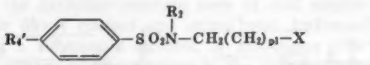
Vsevolod Gruenman, Montclair, Max Hoffer, Nutley, Jay Philip O'Brien, Irvington, and Albert Israel Rachlin, Verona, N.J., and Gerhard Zbinden, Cambridge, England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Mar. 19, 1965, Ser. No. 441,333, now Patent No. 3,382,260, dated May 7, 1968. Divided and this application Nov. 13, 1967, Ser. No. 682,522
Int. Cl. C07c *87/28*
U.S. Cl. 260—570.5 **2 Claims**

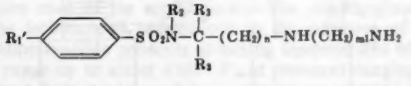
N,N[1]- (iminodialkylene)benezenesulfonamides, N,N[1]-(alkylenediiminodialkylene)benzenesulfonamides and derivatives thereof, effective against tachycardia and arrhythmia in both auricular and ventricular tissues, are prepared, for example, from an intermediate of the formula



VIII

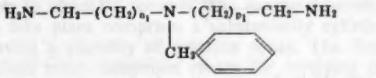


XII



XV

or



XXI

wherein R_1' and R_4' are hydrogen, lower alkyl, protected amino group or amino group precursor; R_2 and R_3 are hydrogen or lower alkyl; X is chlorine or bromine; n_1 and p_1 are each 2 or 3; N is from 1 to 3, and m_1 is from 2 to 4.

3,580,950

CHELATING COMPOSITIONS BASED ON CHELATING ACIDS AND AMINES

Frederick C. Bersworth, 120 Washington St., East Orange, N.J. 07017

Continuation-in-part of applications Ser. No. 580,829, Sept. 20, 1966, now Patent No. 3,351,758, and Ser. No. 588,224, Oct. 20, 1966, now abandoned, and a continuation of application Ser. No. 468,182, June 4, 1965, now abandoned, which is a continuation of applications Ser. No. 446,120, Apr. 6, 1965, and Ser. No. 466,090, June 24, 1965, now abandoned, which in turn is a continuation-in-part of applications Ser. No. 88,604, Feb. 13, 1961, now abandoned, and Ser. No. 88,606, Feb. 13, 1961, now abandoned. This application Nov. 1, 1967, Ser. No. 679,626
Int. Cl. C07c *101/26*
U.S. Cl. 260—534 **5 Claims**

Chelating acids based on the synthetic polyamino polycarboxylic acids are reacted with amino compounds, such as ethylene diamine, ethanolamine, hexamethylene diamine, and polyamines of such linear structure to form reaction products carrying amino structures in relation to the synthetic amino acid starting material, such that effective chelators for iron and other transition metals are formed.

3,580,951

PREPARATION OF FLUOROANILINES

John W. Churchill and Ehrenfreid H. Kober, Hamden, Peter H. Scott, Guilford, and Curtis P. Smith, Cheshire, Conn., assignors to Olin Mathieson Chemical Corporation

No Drawing. Filed Jan. 10, 1969, Ser. No. 790,444
Int. Cl. C07c *85/10*
U.S. Cl. 260—580 **6 Claims**

Fluoroanilines are prepared by the deoxygenation and hydrofluorination of the corresponding nitrobenzenes which are reacted in anhydrous hydrogen fluoride and in an atmosphere of carbon monoxide at 0° to 230° C. under pressures of from 15 to 3000 p.s.i.a. in the presence of certain deoxygenating agents containing phosphorus or sulfur.

3,580,952

PROCESS FOR PURIFYING POLYETHER AMINES

Albrecht Moschel, Kelkheim, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Jan. 11, 1968, Ser. No. 697,016
Claims priority, application Germany, Jan. 18, 1967, F 51,273
Int. Cl. C07c *89/04*
U.S. Cl. 260—584 **3 Claims**

A process for purification of polyether amines by removing oxides, salts or complex compounds of nickel or cobalt therefrom, which comprises stirring 1 to 500 percent by volume of a lower alkanol and 0.05 to 10 percent by volume of water into the crude product, adding an inert solid drying agent, filtering off the solid substances, removing the alkanol, and heating the product until the weight remains constant.

3,580,953

PREPARATION OF 3 - ENDO-METHYL - 3-EXO(4'-METHYL-5'-HYDROXYPENTYL) NORCAMPHOR FROM 2-METHYL-4-PENTENOL

Wayne I. Fanta and William F. Erman, Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Mar. 29, 1968, Ser. No. 717,362
Int. Cl. C07c *49/27*
U.S. Cl. 260—586R **14 Claims**

Process for preparing 3-endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl)norcamphor from 2-methyl-4-pentenol

comprising the steps of: (1) esterifying 2-methyl-4-pentenol; (2) hydrobrominating the ester in the presence of a free radical catalyst; (3) reducing the hydrobrominated ester to 2-methyl-5-bromopentanol; (4) borating the 2-methyl-5-bromopentanol with boric acid and/or boric anhydride to obtain tri(2-methyl-5-bromopentyl)borate; and (5) alkylating 3-methylnorcamphor with the tri(2-methyl-5-bromopentyl)borate and, subsequently, hydrolyzing the reaction product to obtain 3-endo-methyl-3-exo-(4'-methyl-5'-hydroxypentyl) norcamphor.

3,580,954

PREPARATION OF 3 - ENDO-METHYL - 3-EXO-(4'-METHYL-5'-HYDROXYPENTYL) NORCAMPHOR FROM 2-METHYL-4-PENTENOL

Wayne I. Fanta and William F. Erman, Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Mar. 29, 1968, Ser. No. 717,374
Int. Cl. C07c *49/27*
U.S. Cl. 260—586R **14 Claims**

Process for preparing 3-endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl)norcamphor from 2-methyl-4-pentenol comprising the steps of (1) borating 2-methyl-4-pentenol with boric acid and/or boric anhydride to obtain tri(2-methyl-4-pentenyl)borate; (2) hydrobrominating the tri (2-methyl-4-pentenyl)borate in the presence of a free radical catalyst and, subsequently, hydrolyzing the reaction product to obtain 2-methyl-5-bromopentanol; (3) etherifying 2-methyl-5-bromopentanol with dihydropyran to obtain 2-methyl - 5 - bromopentyl tetrahydropyranyl ether; (4) alkylating 3-methylnorcamphor with the 2-methyl-5-bromopentyl tetrahydropyranyl ether to obtain tetrahydropyranyl ether of 3-endo-methyl - 3 - exo(4'-methyl-5'-hydroxypentyl)norcamphor; and (5) treating tetrahydropyranyl ether of 3-endo-methyl - 3 - exo(4'-methyl - 5' - hydroxypentyl)norcamphor with p-toluenesulfonic acid or hydrochloric acid to obtain 3 - endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl)norcamphor.

3,580,955

AUTO-OXIDATION OF ALDEHYDES IN THE PRESENCE OF ACYLATING AGENTS

Richard Anthony Bafford, Tonawanda, N.Y., assignor to Pennwalt Corporation

No Drawing. Filed Apr. 18, 1968, Ser. No. 722,166
Int. Cl. C07c *73/02*
U.S. Cl. 260—610 **5 Claims**

Peroxy compounds are prepared by reacting free-oxygen, an aldehyde, an organic compound containing active halogen and an acid acceptor, under anhydrous conditions, at a temperature below the decomposition temperature of the desired acylperoxy product.

3,580,956

HYDROXYLATION OF AROMATIC COMPOUNDS

Herman S. Bloch, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Nov. 3, 1967, Ser. No. 680,311
Int. Cl. C07c *37/00, 39/00, 39/06*
U.S. Cl. 260—621 **9 Claims**

The hydroxylation of an aromatic compound wherein an aromatic compound is reacted with hydrogen peroxide in contact with an acidic crystalline aluminosilicate catalyst at hydroxylation conditions. The aromatic compound is employed in molar excess with respect to hydrogen peroxide, and the catalyst contains a rare-earth metallic component.

3,580,957

PREPARATION OF TETRAFLUOROETHYLENE ETHYLENES

Herman S. Bloch, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Aug. 6, 1969, Ser. No. 848,104
Int. Cl. C07c *21/18*
U.S. Cl. 260—653.5 **10 Claims**

Tetrahalo-substituted ethylenes in which all of the halo substituents are identical halogens may be prepared by treating a mixed hexahalo ethane in which at least four of the halogen substituents are identical with a free radical generating catalyst at elevated temperatures in the presence of a hydrocarbon solvent. The tetrahalo-substituted ethylenes are useful as starting materials for the preparation of polymeric substances.

3,580,958

PROCESS FOR THE PRODUCTION OF ACETYLENE

Herbert Baader, Hermulheim, near Cologne, and Kurt Sennewald, Knapsack, near Cologne, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Continuation of application Ser. No. 634,667, Apr. 28, 1967. This application Nov. 3, 1969, Ser. No. 871,595
Claims priority, application Germany, June 1, 1966, K 59,410
Int. Cl. C07c *11/24*
U.S. Cl. 260—679 **6 Claims**

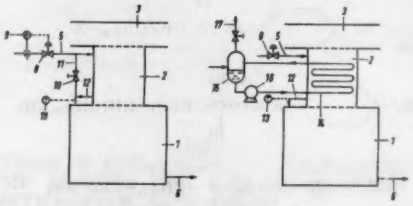
Acetylene is produced by subjecting a dihalogenoethane and/or a vinyl halide to dehydrohalogenation comprising passing the dihalogenoethane and/or the vinyl halide at a temperature between 400 and 850° C. over a catalyst formed of chlorides of the metals comprising lithium, beryllium, magnesium, calcium, strontium, barium, cerium, antimony, copper, silver, gold, zinc, cadmium, mercury, titanium, chromium, manganese, iron, cobalt, nickel, palladium and platinum, the chlorides being used alone or in combination and being deposited on a carrier, if desired.

3,580,959

PROCESS AND APPARATUS FOR PROCESS CONTROL IN CRACKING FURNACES FOR THE THERMAL CRACKING OF HYDROCARBONS

Armin Dorner, Munich, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Oct. 12, 1967, Ser. No. 674,965
Claims priority, application Germany, Oct. 12, 1966, P 15 68 966.4
Int. Cl. C07c *3/30*; C07g *9/14, 9/20*
U.S. Cl. 260—683 **5 Claims**



In cracking furnaces for hydrocarbons, having two heating zones—a radiation zone heated by combustion gases, and a convection zone heated by flue gases, the improvements of limiting the extent of preheating of the feed in the convection zone by: (A) water-cooled cooling coils in the convection zone; or (B) by passing a portion of the flue gases around the convection zone; or passing

only a portion of the feed into the convection zone and mixing said portion with cold feed before entering the combustion zone.

3,580,960

DEHYDROGENATION CATALYST

Ian Montgomery Keen, Wealdstone, Harrow, Peter James Craig, Sunbury, and Christopher Patrick Cadman Bradshaw, Hampton, England, assignors to The British Petroleum Company Limited, London, England

No Drawing. Filed June 18, 1969, Ser. No. 834,557
Claims priority, application Great Britain, July 29, 1968, 35,992/68
Int. Cl. B01j *11/08;* C07c *5/18*
U.S. Cl. 260—683.3 21 Claims

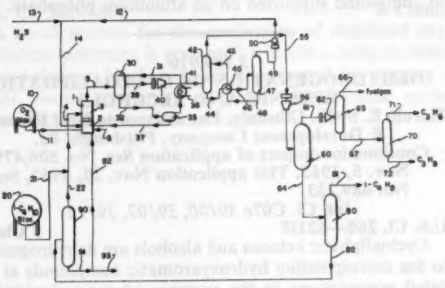
Dehydrogenation catalyst, suitable for the dehydrogenation of alkanes to alkenes, is prepared by ion exchanging a platinum group metal onto a felspar support, preferably albite.

3,580,961

PROCESS FOR PREPARING ISOBUTENE AND THE APPARATUS THEREFOR

Eugene D. Guth, Palos Verdes Estates, Jerry L. Lewis, Cypress, and Leslie J. Van Nice, Manhattan Beach, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed July 22, 1969, Ser. No. 843,370
Int. Cl. C07c *5/18, 3/00*
U.S. Cl. 260—683.3 35 Claims



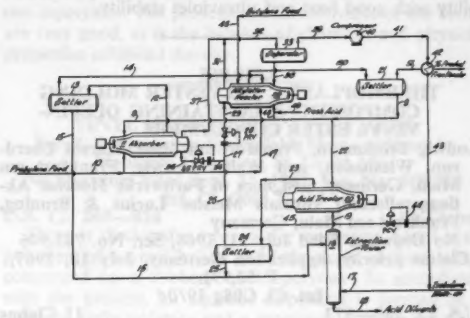
This invention relates to a continuous process for preparing an olefin product comprising prevailing amounts of isobutene and the apparatus therefor under substantially adiabaic conditions. Specifically, the process comprises the oxidation of at least one sulfur-containing compound e.g. hydrogen sulfide in the oxidation-reaction zone of a substantially adiabatic reactor, at temperatures ranging up to about 4500° F. and at pressures ranging up to about 1500 p.s.i.a. The oxidation-reaction products passing from the oxidation-reaction zone of said reactor are brought in direct contact and mixed with hydrocarbons containing a substantial amount of isobutane. The isobutane is converted to isobutene in the dehydrogenation-reaction zone of the same reactor. The dehydrogenation of the isobutane is carried out in the presence of the oxidation-reaction products at mixing temperatures which may range up to about 4500° F., at pressures ranging up to about 1400 p.s.i.a. and for a contact or reaction time ranging up to about 60 seconds. The reactor wherein the reactions take place comprises a substantially cylindrical vessel having a plurality of reaction zones. The first of said reaction zones comprises means for receiving combustible materials and is substantially surrounded by a coolant. The second of said reaction zones is insulated and has means for controlling the relative pressures between the first and second zones. The reactor has on its outer periphery means for carrying hydrocarbons into the area of the dehydrogenation zone wherein said hydrocarbons are converted to olefins.

3,580,962

ALKYLATION PROCESS EMPLOYING FLASH VAPORIZATION OF EXTRACTED AND ACID-TREATED ABSORPTION PRODUCT

Henry D. Moorer, Richmond, Va., Ralph M. Lewis, Weston, Conn., and Richard W. Stokeld, Jr., Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed June 30, 1969, Ser. No. 837,791
Int. Cl. C07c *3/54*
U.S. Cl. 260—683.62 6 Claims



Method for refrigeration of a sulfuric acid alkylation process operated in conjunction with an associated acid recovery process involving reacting used acid with olefin feed in an absorber, extracting resulting dialkyl sulfates, acid treating the extract solution and passing the treated solution to alkylation. The acid treated extract solution is vaporized and passed in indirect exchange with contents of absorber and alkylation reactor. Vaporized isobutane may be separated, recompressed, cooled and returned as a liquid for combination with the acid treated extract stream for additional cooling capacity.

3,580,963

VAPOR DEPOSITED METAL POLYESTER POLYCONDENSATION CATALYSTS

Herbert Kurzke, Bobingen, Wolfgang Goltner, Kriftel, Taunus, and Walter Seifried, Wiesbaden, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation of application Ser. No. 481,396, Aug. 20, 1965. This application Aug. 1, 1969, Ser. No. 849,578
Claims priority, application Germany, Aug. 22, 1964, F 43,809
Int. Cl. C08g *17/015, 39/10*
U.S. Cl. 260—860 4 Claims

A process has been provided for dispersing solids in a liquid or a melt by combining a solid to be dispersed with a solid organic carrier which is soluble in the liquid or melt and introducing the combination of the solid and the solid organic carrier material into the liquid or melt whereby the solid organic carrier material is dissolved, and thereby the solid is accordingly dispersed in the liquid or melt.

3,580,964

CURABLE LINEAR POLYESTERS

Gary L. Driscoll, Boothwyn, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 629,376, Apr. 10, 1967. This application Sept. 6, 1967, Ser. No. 665,711
Int. Cl. C08g *17/10, 17/12;* C08f *21/02*
U.S. Cl. 260—871 21 Claims

Curable polyesters containing an adamantane moiety are prepared in one- or two-stage condensation type reactions. The polyesters are prepared from a hydrocarbon

substituted adamantane diol and anhydride of unsaturated diacids such as maleic acid alone or with a second diol such as ethylene glycol. In addition to the anhydrides of unsaturated diacids, the polyester can contain saturated diacid moieties. The polyesters so prepared can be crosslinked with a conventional crosslinking agent and curable polymer can be cast into sheets or films and cured. The curable blend can be used as a coating and cured in place to give chemical-resistant surfaces. The crosslinked polymers exhibit extremely good hydrolytic and solvent stability with good heat and ultraviolet stability.

3,580,965

THERMOPLASTIC POLYESTER MOLDING COMPOSITIONS CONTAINING OLEFIN-VINYL ESTER COPOLYMERS

Ludwig Brinkmann, Frankfurt am Main, Harald Cherdron, Wiesbaden, and Walter Herwig, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed July 11, 1968, Ser. No. 743,946
Claims priority, application Germany, July 18, 1967, F 52,991
Int. Cl. C08g *39/04*
U.S. Cl. 260—873 **11 Claims**

Molding compositions which can be processed thermoplastically are prepared from a mixture of linear saturated polyesters and α-olefin-vinyl ester copolymers and are distinguished by a high impact strength.

3,580,966

GRAFT COPOLYMERS OF ACRYLONITRILE ONTO A LINEAR POLYETHER HAVING QUATERNISED NITROGEN ATOMS

Helmut Engelhard, Leverkusen, Francis Bentz, Cologne, and Heinrich Rinkler and Günther Nischk, Dormagen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 26, 1968, Ser. No. 787,222
Claims priority, application Germany, Jan. 4, 1968, P 17 20 771.5
Int. Cl. C08f *29/56*
U.S. Cl. 260—898 **6 Claims**

The invention relates to an acrylonitrile graft polymer having improved affinity for acid dyes comprising acrylonitrile being graft-polymerised together with other acrylic or vinyl monomers and a linear polyether having quaternised nitrogen atoms as graft base. The graft base has a molecular weight of about 1,000 to about 15,000 and the acrylonitrile graft polymer has a K-value (according to Fikentscher, Cellulose Chemie 13, (1932), page 58) of from 70 to 100. In the process of preparing said acrylonitrile graft polymer acrylonitrile and other copolymerisable comonomers are graft-polymerised in the presence of a graft base consisting of a linear polyether having quaternised nitrogen atoms.

3,580,967

SUBSTITUTED 2-AMINOMALONAMIDES PRODUCTION

John R. Norell, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Continuation-in-part of application Ser. No. 560,859, June 27, 1966. This application Jan. 31, 1969, Ser. No. 795,676
Int. Cl. C07c *103/33*
U.S. Cl. 260—557 **8 Claims**

Production of 2-aminomalonamides having hydrocarbyl substituents, which amides are useful as pharmaceutical and agricultural chemicals, antiplasticizers, processing aids and the like, by the reaction of olefins, hydrogen cyanide and anhydrous hydrogen fluoride followed by hydrolysis.

3,580,968

PROCESS FOR PREPARING N,N-DIALKYL-ACYLAMIDES

Michio Kuraishi, Setunobu Asano, and Nobuo Isogai, Niigata-shi, Japan, assignors to Japan Gas-Chemical Company, Inc., Tokyo, Japan

No Drawing. Filed Apr. 30, 1969, Ser. No. 820,617
Claims priority, application Japan, May 9, 1968, 43/31,096
Int. Cl. C07c *103/00*
U.S. Cl. 260—561R **6 Claims**

N,N-dimethylacylamides are prepared with commercial advantages by reacting trimethylamine with lower fatty acids or esters thereof or compounds capable of forming said acids or esters by reaction with carbon monoxide at elevated temperatures and under high pressures and in the presence of metal carbonyls, e.g. aliphatic alcohols and ethers, and with carbon monoxide at elevated temperatures and under high pressures in the presence of metal carbonyls either singly or in combination with halogens or halogen compounds.

3,580,969

DEHYDROGENATION OF OLEFINS

George J. Nolan and Vernon C. F. Holm, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Jan. 8, 1968, Ser. No. 696,146
Int. Cl. C07c *5/18*
U.S. Cl. 260—666 **4 Claims**

Improvements in hydrocarbon dehydrogenation are realized by the use of a catalyst comprising tin and/or a tin compound supported on an aluminum phosphate.

3,580,970

DEHYDROGENATION OF CYCLOALIPHATIC KETONES AND ALCOHOLS

Harold E. Swift, Gibsonia, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 506,479, Nov. 5, 1965. This application Nov. 22, 1967, Ser. No. 689,233
Int. Cl. C07c *39/00, 39/02, 39/12*
U.S. Cl. 260—621H **9 Claims**

Cycloaliphatic ketones and alcohols are dehydrogenated to the corresponding hydroxyaromatic compounds at elevated temperatures in the presence of a novel nickel-tin catalyst.

3,580,971

THIXOTROPIC ORGANOPOLYSILOXANE COMPOSITIONS HAVING PENDANT METHACRYLIC ACID POLYMER

John Charles Getson, Tecumseh, Mich., assignor to Stauffer-Wacker Silicone Corporation, Adrian, Mich.

No Drawing. Filed Aug. 13, 1969, Ser. No. 849,920
Int. Cl. C08g *47/10*
U.S. Cl. 260—825 **6 Claims**

Polymethacrylic acid graft modified siloxanes which exhibit thixotropic properties.

3,580,972

COATING COMPOSITION OF A MIXTURE OF A VINYL ESTER OF AN ALIPHATIC ACID-CARBOXYLIC ACID COPOLYMER AND A TERPOLYMER OF A VINYL ESTER OF AN ALIPHATIC ACID, A CARBOXYLIC ACID ESTER AND A CARBOXYLIC ACID

Robert A. Isaksen, Longmeadow, and Robert V. De Shay, East Longmeadow, Mass., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 617,453, Feb. 21, 1967. This application Aug. 7, 1969, Ser. No. 848,354
Int. Cl. C08g *45/04;* **C08f** *29/50*
U.S. Cl. 260—836 **12 Claims**

A first interpolymer of 0.5 to 10 mol percent of an ethylenically unsaturated mono- or poly-carboxylic acid

and 99.5 to 90 mol percent of a vinylidene ester of a saturated aliphatic acid is blended with a second interpolymer which acts as a polymeric plasticizer. Preferably, the first interpolymer is a copolymer of vinyl acetate and crotonic acid. The second interpolymer is comprised of 75 to 95 mol percent of a vinylidene ester of a saturated aliphatic acid (principally vinyl acetate), 5 to 25 mol percent of an ethylenically unsaturated mono- or polycarboxylic acid having at least 75% of its carboxylic acid groups esterified with an aliphatic alcohol (principally dibutyl maleate), 0.5 to 10 mol percent of an ethylenically unsaturated mono- or poly-carboxylic acid (principally acrylic acid), and, optionally, zero to 3 mol percent of a glycidyl ester of an ethylenically unsaturated mono- or poly-carboxylic acid (principally glycidyl methacrylate). The interpolymer blend is useful for the protection of materials having at least one finished surface. When no longer needed, it may be removed from the substrate by washing with an aqueous alkaline solution.

3,580,973

POLYOXYMETHYLENE-FORMAL-CONTAINING POLYESTER BLOCK POLYMER

Daniel M. Kennedy, Jr., East Brunswick, and Carl Naeher Zellner, Berkeley Heights, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed Dec. 18, 1967, Ser. No. 691,160
Int. Cl. C08g *17/06, 39/10, 51/58*
U.S. Cl. 260—860 **8 Claims**

A novel process for the production of stabilized oxymethylene polymers is presented wherein a polyoxymethylene-polyester block polymer is prepared by reacting a linear, formal-containing polyester with trioxane under trioxane polymerization conditions.

3,580,974

NITRILE POLYMERIC BLENDS

Yoon Chai Lee and Quirino A. Trementozzi, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Jan. 3, 1969, Ser. No. 788,963
The portion of the term of the patent subsequent to June 24, 1986, has been disclaimed
Int. Cl. C08f *37/18, 41/12*
U.S. Cl. 260—876R **8 Claims**

A polymeric blend is prepared from an acrylonitrile/isobutylene copolymer and a methacrylonitrile/isobutylene copolymer. The processing characteristics of the blend are very good, as is the balance of chemical and physical properties exhibited thereby.

3,580,975

VINYL HALIDE GRAFT POLYMERS

Leo E. Rademacher, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 21, 1967, Ser. No. 669,372
Int. Cl. C08f *15/00*
U.S. Cl. 260—878 **13 Claims**

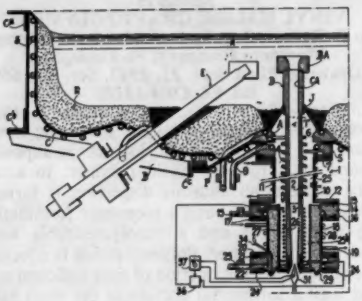
There is disclosed a process for preparing novel graft polymers of a vinyl halide and long-chain aliphatic vinyl compound on a rubbery olefin polymer. In accordance with the process, an aqueous dispersion is formed of a rubbery olefin polymer and a monomer formulation containing vinyl halide and a copolymerizable long-chain aliphatic vinyl monomer. Polymerization is effected in the resulting dispersion for a period of time sufficient to polymerize at least a substantial portion of the vinyl halide and aliphatic vinyl monomer present therein and produce grafting of at least a portion of the rubbery olefin polymer after which the copolymeric product is recovered. In the preferred process the faster reacting monomer is continuously added so as to maintain a higher ratio of the slower acting monomer in the dispersion.

ELECTRICAL

3,580,976
DEVICE FOR REGULATING THE TEMPERATURE OF GLASS AT THE OUTLET OF A VERY HIGH TEMPERATURE GLASS MELTING FURNACE

Jacques Marie Yves le Clerc de Bussy, Aumatres, 80 Oisemont, France

Filed Jan. 26, 1970, Ser. No. 5,569
Claims priority, application France, Jan. 28, 1969, 6901615
Int. Cl. C03b 5/26, 5/30
U.S. Cl. 13—6 12 Claims

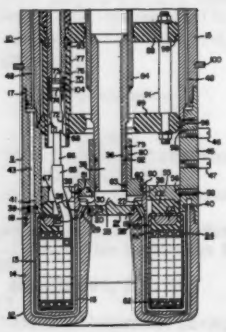


The regulating device provides at its outlet a glass whose temperature is adapted to the use of conventional feeders, notwithstanding the very high temperature prevailing in the furnace with which the device is associated. The glass flows through an extension which is surrounded by an enclosure which has, first, a heat-permeable wall for cooling the glass and, then, a heat-impermeable wall. A resistance corrects the temperature of the glass in the outlet by means of a control loop.

3,580,977
QUICK-CHANGE FIELD COIL ASSEMBLY FOR USE IN AN ELECTRODE HAVING A FLUID-COOLED ARCING SURFACE

George A. Kemeny, Export, and Charles B. Wolf, Irwin, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 777,366, Nov. 20, 1968, now abandoned. This application Feb. 18, 1970, Ser. No. 12,269
Int. Cl. H05b 7/06, 7/10, 7/12
U.S. Cl. 13—18 19 Claims

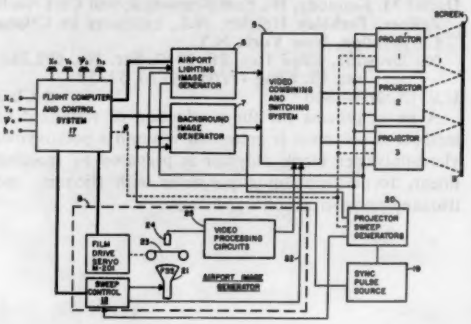


An electrode has a detachable tip secured to a supporting column. The column includes fluid-channeling and electrically conducting tubes, electrically insulated from each other, extending at least a portion of the way therethrough toward the tip. Within the removable tip is a detachable magnetic field coil assembly including conduit extensions which, when the coil assembly is inserted in the electrode, are aligned with the tubes respectively. Male fittings engage contact finger assemblies and make good electrical connection. The fittings may be on the tubes and the contact finger assemblies may be on the conduit extensions, or the fittings may be on the conduit extensions and the contact finger assemblies may be secured to the ends of the tubes. Means carried by the column, or the conduit extensions including fittings or finger assemblies thereon, or both, provide fluid-tight seals for the cooling fluid flow circuit through the magnetic field coil.

3,580,978
VISUAL DISPLAY METHOD AND APPARATUS

William C. Ebeling, Binghamton, N.Y., assignor to Singer-General Precision, Inc., Binghamton, N.Y.

Filed June 6, 1968, Ser. No. 735,109
Int. Cl. G09b 9/02; G06g 7/72
U.S. Cl. 35—10.2 46 Claims



Apparatus for generating a realistic wide-screen visual display for an aircraft simulator with realistic perspective throughout plural widely different phases of simulated flight by scanning a plurality of different successive types of transparencies with a flying spot scanner to derive video signals to drive television display projectors, including the scanning of a pair of transparencies to provide a background terrain elevation image without topographical features, scanning of a second type of transparency to provide an image of an airport or the like to be inset into the background image and distorting the inset image as simulated range and elevation angle from the airport vary, scanning a third type of transparency to provide a different type of inset image during simulated approach and landing and distorting that inset image in accordance with deviation of the simulated aircraft from a reference glideslope, and scanning a fourth type of transparency to provide a panoramic view of the airport during simulated taxiing and parking maneuvers, with means for automatically controlling the successive scanning modes with signals from a flight computer.

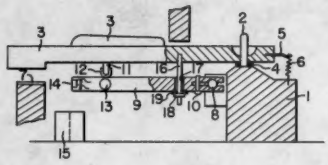
3,580,979
ELECTRONIC MUSICAL KEYER WITH TOUCH RESPONSIVE VOLUME CONTROL EMPLOYING A MECHANICAL ELECTRICAL TRANSDUCER

Hiroshi Amano, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Nakazawa-cho, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Aug. 8, 1969, Ser. No. 848,544
Claims priority, application Japan, Aug. 13, 1968, 43/57087
Int. Cl. G10h 3/00; G10c 3/12; G10b 3/12
U.S. Cl. 84—1.1 4 Claims

A keyboard device for an electronic musical instrument comprising a plurality of keys, a lever located under each of

the keys, the lever being swingably supported at one end by a pivot shaft and provided with a weight at the other free end, a mechanical-electrical transducer including a movable magnetic sensor attached to the free end of the lever and a fixed magnet disposed in such position that the magnet applies varied effects on the sensor depending on the relative posi-



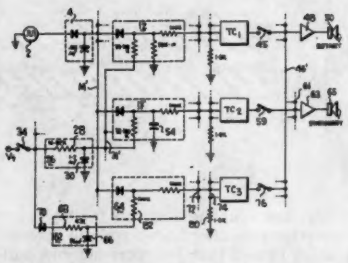
tions thereof, a drive member fixed on the key to transmit the depression of the key to the lever, and a bridle rod fixed to the key to return the lever when the key is released, the lever being provided in relation to the pivot shaft with sufficient friction force to hold the lever in a depressed position in accordance with the key depressing strength.

3,580,980

DIODE KEYING SYSTEM FOR ELECTRONIC ORGAN

Dale M. Uetrecht, Cincinnati, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio

Filed Aug. 26, 1968, Ser. No. 755,043
Int. Cl. G10h *1/06*
U.S. Cl. 84—1.22 **32 Claims**



The keying networks between continuously running square wave tone signal sources and the sound output system of an electronic organ each consist of an isolating diode gate for each source, followed by the parallel combination of at least two keying diode gates of simplified circuitry which either gate-through the square wave signal without change in wave shape (for odd-order-harmonic tones) or gate-through and modify the wave-shape into sawtooths (for full harmonic tones). A keyed activating circuit for the isolating diode gate and the keying diode gates corresponding to a selected key may contain a single key switch connected to a source of direct current and a common R–C attack network for two adjacent footage keying diode gates as well as for the paralleled keying diode gates. A common coupler switch for coupling between keyboards is located between the direct current source and auxiliary key switches ganged respectively to the main key switches for a given manual, the auxiliary key switches being connected to a diode to isolate them from the main key switches in the coupled keyboard.

ERRATUM

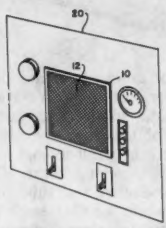
For Class 174—10 see:
Patent No. 3,579,863

3,580,981

ELECTRICALLY CONDUCTIVE VENTILATING PANEL

Richard W. Lamp, Mendham; Joseph E. Kopf, Cranford; Donald P. Dravis, Roselle, and Robert A. Cuneo, Bergenfield, N.J., assignors to Technical Wire Products, Inc., Cranford, N.J.

Filed Oct. 14, 1969, Ser. No. 866,332
Int. Cl. H05h *9/00*
U.S. Cl. 174—35 **12 Claims**



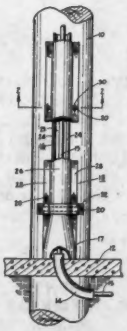
A framed electrically conductive honeycomb is provided by assembling an electrically conductive honeycomb, an electrically conductive frame for the honeycomb and an electrically conductive textile positioned between the frame and around the periphery of the outer cells of the honeycomb and in contact with both, and then coating the assembly in a metal plating bath to coat the assembly with a coating of an electrically conductive compound thereby assuring continuous mechanical, strong physical and electrical contact between the frame and the honeycomb, as well as a noncorrosion coating.

3,580,982

POLE RISER GUARD—BACK-UP PLATE COMBINATION

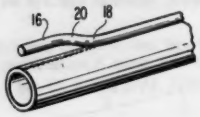
Jamshed Behram Havewala, Newark, Del., assignor to Haveg Industries, Inc., Wilmington, Del.

Filed Dec. 22, 1969, Ser. No. 887,135
Int. Cl. H02g *7/20*
U.S. Cl. 174—45 **8 Claims**



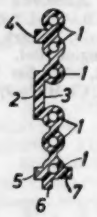
A pole riser guard and backup plate combination which is attached to a power pole and surrounds electrical cable. The backup plate is generally channel-shaped and is secured to the pole and the guard extends over the backup plate and receives the backup plate therein whereby the cable is protected by the backup plate from instruments inserted between the guard and the pole.

3,580,983
CONDUCTIVE LINE TUBE
Isaac S. Jackson, Greenwich, N.Y., assignor to National Catheter Corp., Argyle, N.Y.
Filed Dec. 3, 1969, Ser. No. 881,750
Int. Cl. F16l 11/12; H05f 3/02
U.S. Cl. 174—47 10 Claims



The fabrication of conductive line tubing or electrically conductive medicosurgical tubes by extruding from a mass of flexible plastic material an elongated tube contemporaneous with the extrusion of an elongated electrically conductive plastic filament that is secured to said tube in superimposed relationship piggyback arrangement. The plastic material used to form the conductive line tubes is compounded from dielectric polymers while the filament is formed from a flexible electrically conductive plastic material. The extrusion of the tube and filament is continuous with the filament being secured to the tube subsequent to its withdrawal from an extrusion die.

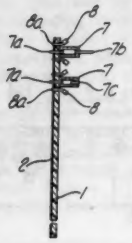
3,580,984
SURFACE WIRING SYSTEMS
Knut Arnold Oscar Gladh, Sodertalje, Sweden, assignor to Gladol S.A., Geneva, Sweden
Filed Dec. 12, 1968, Ser. No. 783,314
Claims priority, application Sweden, Dec. 13, 1967, 17,105/67
Int. Cl. H02g 3/04
U.S. Cl. 174—48 3 Claims



A prefabricated system for electrical installations in buildings, apartments and the like, wherein at least six aluminum conductors are embedded in a core, said core is covered by a cover means in the form of a conventional floor or ceiling molding or a conventional doorcase and jointed at at least each corner and outlet of the installation, and wherein the material of the core is of substantially uniform thickness around the aluminum conductors embedded in the core.

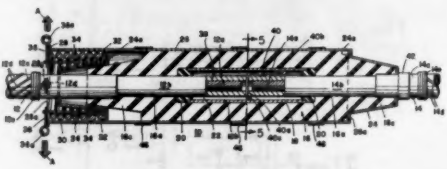
3,580,985
CABLE CONNECTOR AND MEANS TO MANUFACTURE SAME
Helmut Rothfuss, and Horst Rode, Spahnacher, both of, Germany, assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Mar. 26, 1969, Ser. No. 810,634
Claims priority, application Germany, Mar. 29, 1968, P 17 65 078.1
Int. Cl. H05k 1/08
U.S. Cl. 174—68.5 12 Claims

A novel cable connector and method of fabricating same is described wherein interconnecting conductor paths are defined on a printed circuit board, the board is perforated, a plug or socket connector is inserted in the perforations, and the bare ends of feed cables are inserted into perforations adjacent the solder pins of the plug or socket connector. The entire assembly is then batch soldered, thus economically



and conveniently providing complete cable plug assemblies. A technique for rotatably mounting such completed cable plug assemblies is also described.

3,580,986
CORONA FREE COUPLING ASSEMBLY FOR COAXIAL CABLES
Donald O. Misare, Riverside, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.
Filed Oct. 22, 1969, Ser. No. 868,548
Int. Cl. H02g 15/08
U.S. Cl. 174—73 4 Claims

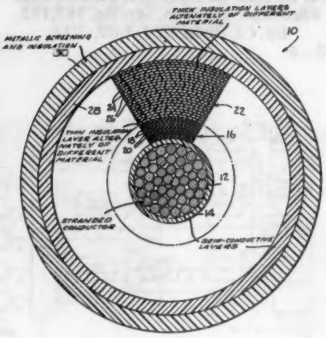


A corona free coupling assembly for high voltage coaxial cable comprising an elastomeric body of insulating material having an elongated bore for receiving end portions of the cables, tubular inner shield means embedded in the body in coaxial alignment with the bore and spaced from opposite ends thereof; a tubular connector sleeve is inserted into the bore within said inner shield means for connecting the central conductors in end-to-end relation; conductive spring means is mounted on the connector sleeve including a deflectable free end portion normally biased outwardly for contact against the inner shield means embedded in the elastomeric body. The spring means is deflectable inwardly against the sleeve while being inserted into the elastomeric body with the connected cables. An outer conductive shield means is provided around the insulated elastomeric body for connecting the outer shielding systems of the cables.

3,580,987
ELECTRIC CABLE
Paolo Gazzana Priaroggia, Milan, Italy, assignor to Pirelli Societa per Azioni, Milan, Italy
Filed Mar. 18, 1969, Ser. No. 808,240
Claims priority, application Italy, Mar. 26, 1968, Dec. 23, 1968, 14832A;25510A
Int. Cl. H01b 7/02
U.S. Cl. 174—120 9 Claims

Electric cable and process for its manufacture are disclosed. The electric cable has its electric conductor covered with extruded insulation comprising numerous layers of insu-

lating material, the number of such layers being more than two and preferably ranging between 5 and 100, and the thickness of each of such layers being not greater than 2 mm. and preferably ranging between 0.2 and 2 mm.

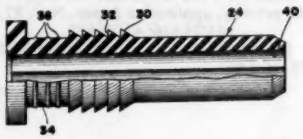


3,580,988

GROMMET FOR SPEAKER ENCLOSURE

Donald W. Orlowski, Glenview, and Donald S. Schroeder, Barrington, Ill., assignors to Ampex Corporation, Redwood City, Calif.

Filed Aug. 12, 1969, Ser. No. 849,423
Int. Cl. H01b 17/30; H04r 7/16; F16l 5/02
U.S. Cl. 174—153 **4 Claims**



A resilient grommet for forming an airtight seal in an opening while permitting the airtight passage of an electrical cord through the opening. The grommet provides strain relief for the cord and is provided with a series of ribs to prevent pullout.

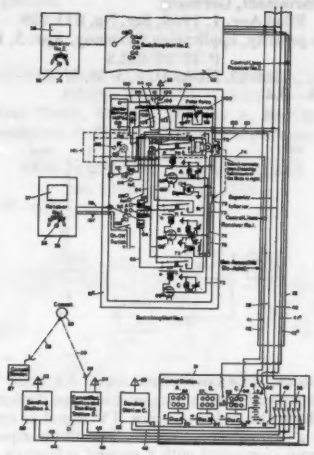
3,580,989

SUBSCRIPTION TELEVISION SYSTEM UTILIZING A TRANSMISSION LINE FOR CONDUCTING EACH AESTHETIC QUALITY TELEVISION PROGRAM

Thomas A. Banning, Jr., Apt.1408, 5500-5520 S. Shore Drive, Chicago, Ill.

Continuation-in-part of application Ser. No. 559,494, June 22, 1966, which is a continuation-in-part of application Ser. No. 490,402, Sept. 27, 1966, now Patent No. 3,478,162, which is a continuation-in-part of application Ser. No. 459,399, May 27, 1965, now Patent No. 3,365,542. This application May 19, 1967, Ser. No. 645,843
Int. Cl. H04n 1/32, 1/34
U.S. Cl. 178—5.1 **13 Claims**

A Subscription Television System, including simultaneous coaxial transmission of several different sending station programs through an attended control station, with switching apparatus at each subscription receiver enabling the control station attendant to deliver to the subscription receiver any subscriber-selected one of said programs in subscriber-selected aesthetic rendition quality, including inferior aesthetic quality without subscription charge, or a superior quality with subscription charge; including provisions assuring against fraudulent subscription-receiver program reception in superior instead of inferior quality rendition; and to assure subscriber-receiver reception of only the selected program, in the quality instructed to the attendant.

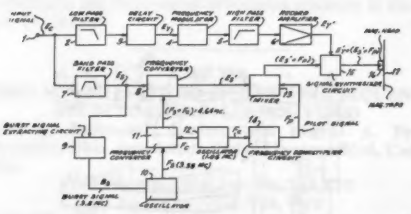


3,580,990

RECORDING AND REPRODUCING SYSTEM FOR COLOR VIDEO SIGNALS

Toshihiko Numakura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 13, 1968, Ser. No. 775,277
Claims priority, application Japan, Nov. 13, 1967, 42/72736
Int. Cl. H04n 9/32
U.S. Cl. 178—5.2 **22 Claims**



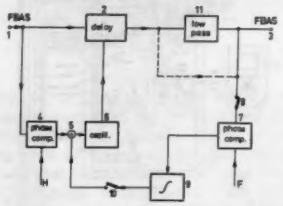
In recording a composite color video signal consisting of a luminance signal and a modulated chrominance signal having its frequency band contained within the luminance signal band, a carrier is frequency modulated with the luminance signal separated from the composite signal, the modulated chrominance signal separated from the composite original is frequency converted to have a frequency band juxtaposed to the lower limit of the bandwidth of the frequency-modulated luminance signal, and the latter is combined with the thus converted chrominance signal and with a pilot signal having a still lower bandwidth to provide a combined signal which is magnetically recorded. Upon magnetic reproduction of the combined signal thus recorded, the pilot signal, frequency-modulated luminance signal and converted chrominance signal are separately extracted from the reproduced signal, amplitude variations of the pilot signal are detected to control the amplitude of the converted chrominance signal which is reconverted to substantially its original frequency band by reference to the pilot signal, and the frequency-modulated luminance signal is demodulated and combined with the reconverted modulated chrominance signal to provide the composite color video signal.

3,580,991

AUTOMATIC TIME CORRECTION CIRCUIT FOR COLOR TV SIGNALS

Gerhard Krause, Darmstadt, Germany, assignor to Fernseh GmbH, Darmstadt, Germany

Filed Apr. 1, 1969, Ser. No. 811,989
Claims priority, application Germany, Apr. 3, 1968, P 17 74 082.8
Int. Cl. H04n 5/21, 5/78, 9/12
U.S. Cl. 178—5.4 7 Claims



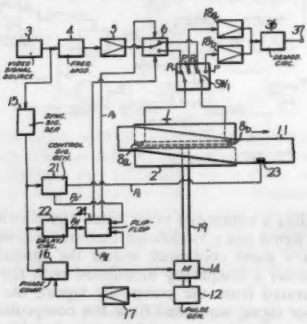
An automatic time correction circuit for color TV signals which are received from a magnetic storage device, such as a tape, in which the delayed color TV signal is compared in phase with a first reference signal, then the compared output signal is again compared with a second reference signal and, the output from the second comparator is superimposed on the output of the first comparator.

3,580,992

MULTI-HEAD MAGNETIC RECORDING AND REPRODUCING DEVICE FOR VIDEO SIGNALS FEATURING HEAD SWITCHING IN THE RECORD MODE

Yasuhito Eguchi, Tokyo; Yoshio Fujiwara, and Takaaki Tohma, Kanagawa-Ken, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed June 18, 1968, Ser. No. 738,029
Claims priority, application Japan, June 19, 1967, July 22, 1967, 43/39,158; Utility 43/63,429
Int. Cl. H04m 5/78
U.S. Cl. 178—6.6HS 6 Claims



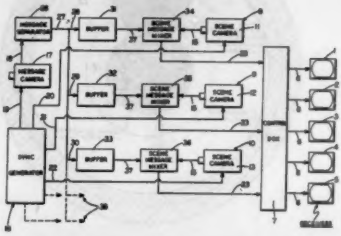
In a magnetic recording and reproducing device having two rotary magnetic heads for recording and reproducing signals, such as video signals, in skew tracks traced across a magnetic tape by the heads, a switching circuit is provided which, during recording, alternately supplies the video signals to the heads in synchronism with the vertical synchronizing pulses included in the video signals. The video signals thus recorded in successive tracks have overlapping portions which either correspond to a very short recording period of the order of one horizontal period of the video signal and are contained in the vertical blanking period of the signal, or one of such overlapping portions is recorded at a substantially lower level than the other. In reproducing the video signals thus recorded, the outputs of the heads are merely combined.

3,580,993

MULTIPLE CAMERA SUPERIMPOSED MESSAGE CLOSED CIRCUIT TELEVISION SYSTEM

Robert E. Sandorf, and Robert A. Hammond, Canton, Ohio, assignors to Diebold, Incorporated, Canton, Ohio

Filed Sept. 27, 1968, Ser. No. 763,193
Int. Cl. H04n 5/22, 7/00, 7/18
U.S. Cl. 178—6 4 Claims



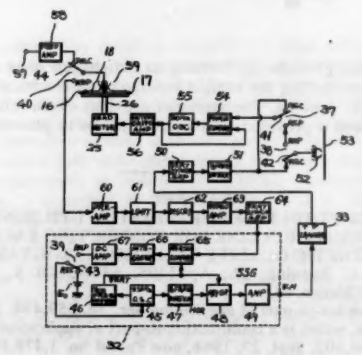
A closed circuit television system advantageously used in conducting television banking services. The system has a plurality of camera viewed teller stations and a plurality of customer stations equipped with monitors. Any teller camera may be connected selectively with one of a plurality of the monitors. A message camera viewing an advertising message from the bank is incorporated in the system so that the same message is superimposed upon any of the teller camera scenes displayed at any of the customer receivers.

3,580,994

SIGNAL EDITING SYSTEM FOR MAGNETIC RECORDING AND REPRODUCING APPARATUS

Yoshiteru Kosaka, Kamakura, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Nov. 25, 1968, Ser. No. 778,666
Claims priority, application Japan, Nov. 27, 1967, 43/75,626; 43/75,627
Int. Cl. G11b 5/04, 27/02; H04n 5/78
U.S. Cl. 178—6.6A 2 Claims

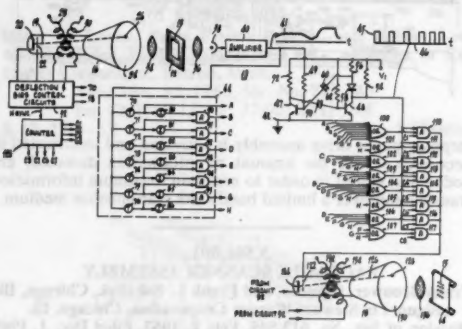


A signal editing system for magnetic recording and reproducing apparatus which records, on a magnetic tape on which one video signal is already recorded. The recording in either a second video signal from a television camera or video signals other than the second video signal, such as incoming signals of television receivers, for example. The new recording may start at a point on the magnetic tape which is halfway through the one video signal recorded thereon. The signal editing system provides means whereby the synchronizing signals of the two video signals can be brought into phase agreement with each other so that editing of the video signals can be effected without the occurrence of disturbance in synchronism.

3,580,995
CONSTANT SIZED HALFTONE DOT IMAGE GENERATOR

Richard J. Klensch, Trenton, N.J., assignor to RCA Corporation

Filed Apr. 29, 1968, Ser. No. 725,041
Int. Cl. H04m *5/84*
U.S. Cl. 178—6.7 **8 Claims**

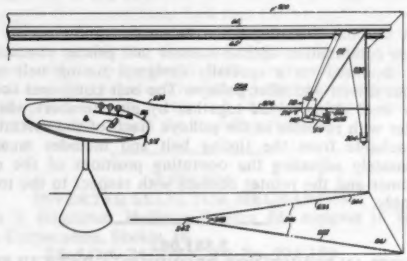


A halftone image generator that simulates the continuous tones in an original pattern by producing a plurality of visually subliminal halftone dots of substantially the same size, with the coordinate spacings between the halftone dots being made dependent upon the density of the tones in the original pattern.

3,580,996
VIDEO LANDING AND DEPARTURE SYSTEM

Edward Stanton Maxey, 921 E Ocean Blvd., Stuart, Fla.

Filed Oct. 17, 1968, Ser. No. 768,256
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 **20 Claims**

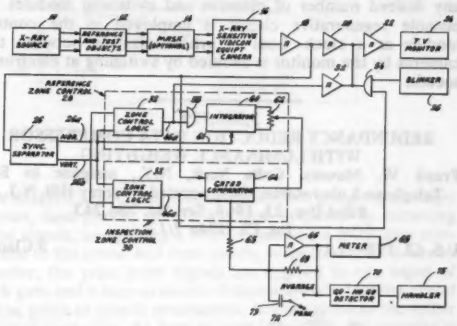


A landing and departure system for aircraft, of particular utility in making blind landings at an airport. The system incorporates a closed circuit video system which provides a video display in an aircraft of a detailed model or mockup of the airport for use by the pilot in making the blind landing. In the system, the video camera and model mockup of the airport are moved relative to each other so that the line of sight view of the model airport, as seen by the camera, is the same as the line of sight view which would appear with clear visibility through the cockpit window to the eye of the pilot. The video camera is focused on the model and is movable along a track toward or away from the model in proportion to the approach or departure of the aircraft and simultaneously the model and camera are synchronously moved on tilt and rotating axes to provide a relationship between the camera and model airport in direct proportion to the position and altitude of the aircraft relative to the airport. Means are also provided to manipulate the camera in response to actual roll, pitch and yaw of the aircraft and to vary the video image accordingly. Appropriate ground and airborne electronic control means, such as radar, radio, continuous wave system, etc. are utilized to sense and move the elements of the system. Also, information, such as actual elevation, distance to the runway and other critical information may be transmitted to the aircraft and displayed on the marginal edges of the video picture.

3,580,997
VIDEO SYSTEM FOR AUTOMATIC PRODUCTION LINE INSPECTION BY X-RAY

Thomas Alan Webb, Milford, and Jay A. Harvey, Fairfield, Conn., assignors to Balteau Electric Corporation, Stamford, Conn.

Filed July 5, 1968, Ser. No. 742,948
Int. Cl. H04n *1/38, 7/18*
U.S. Cl. 178—6.8 **26 Claims**

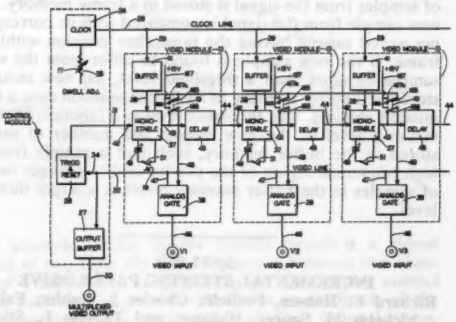


The disclosed system employs a television camera to convert the radiographic image produced by an irradiated test object to video signals which are processed and interpreted electronically without human interpretation. The video signals are processed to provide an indication of the radiographic density of a test object in relation to that of a reference object. When plural test objects are analyzed in succession and/or are in motion while being irradiated, a radiation mask having synchronizing and coding slots is used to coordinate the video signal processing circuitry to the scan of the TV camera.

3,580,998
VIDEO MULTIPLEXER-SWITCHER WITH SEQUENCE RECYCLING UPON LOSS OF VIDEO

Robert A. Hammond, Canton, and Eugene A. Presta, Louisville, Ohio, assignors to Diebold Incorporated, Canton, Ohio

Filed Dec. 18, 1968, Ser. No. 784,619
Int. Cl. H04n *7/02, 7/08, 7/18*
U.S. Cl. 178—6.8 **5 Claims**



A plurality of television cameras such as in a closed circuit television system for industrial plant security are provided

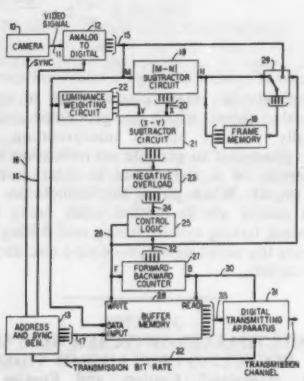
with a monitoring system including a control module and a plurality of switching modules, one for each camera, and also a single monitoring means such as a television receiver or a video tape recorder or both, at which signals or pictures from the cameras appear sequentially. The monitoring system includes means for enabling the picture from the cameras to be displayed at the monitor successively each for a selected desired length of time; or for enabling any camera to be removed in effect from the system by pressing a button; or for enabling any selected camera to remain connected to the monitor continuously or for any desired period of time merely by the operation of pushbuttons. Flexibility is provided in the system by utilizing monostable regenerative circuits in each video switching module to determine the length of time the corresponding camera remains operatively connected to the monitor and by successively triggering successive switching modules so that a system may be assembled with any desired number of cameras and switching modules. A bistable regenerative circuit is employed in the control module as a clock. Loss of synchronization between the cameras by the monitor is avoided by switching at electronic speeds.

3,580,999

REDUNDANCY REDUCTION DATA COMPRESSOR WITH LUMINANCE WEIGHTING

Frank W. Mounts, Colts Neck, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 23, 1968, Ser. No. 786,243
Int. Cl. H04n 7/12
U.S. Cl. 178—7.1 **5 Claims**



A redundancy reduction data compressor is described for processing a video signal having time subintervals called frames, the amplitude level of which signal is an indication of the luminance level in a scene being viewed. An entire frame of samples from the signal is stored in a frame memory. Each new sample from the signal is compared with its corresponding stored sample having the same time position within the frame. If the new sample is found to differ from the stored sample by more than a threshold level, the new sample is stored in a buffer memory to await transmission over a transmission channel. The threshold level is a function of the luminance level of the new sample and number of samples stored in the buffer memory, such that a sample from the high brightness region of the picture and/or a larger number of samples in the buffer memory result in a larger threshold level.

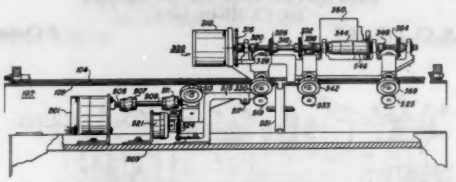
3,581,000

INCREMENTAL STEPPING PAPER DRIVE

Richard C. Hansen, Penfield; Charles J. Mahler, Fairport; Nicholas M. Soures, Webster, and Thomas L. Stickney, Rochester, all of, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Oct. 7, 1968, Ser. No. 765,538
Int. Cl. H04n 1/22; B65h 5/06
U.S. Cl. 178—7.6 **11 Claims**

An incremental stepping paper drive assembly for advancing a document or the like past a scanning station in a facsimile communication system. In combination with a binary digit encoder and buffer storage unit, the incremental



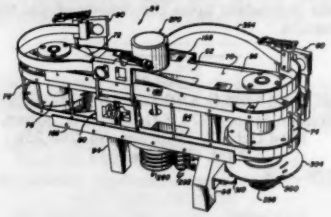
stepping paper drive assembly is activated and interrupted in accordance with the amount of information detected, encoded and stored in order to maintain maximum information transmission over a limited bandwidth transmission medium.

3,581,001

FACSIMILE SCANNER ASSEMBLY

Frans Brouwer, Glencoe, and Frank L. Sobchak, Chicago, Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Division of Ser. No. 613,545, Feb. 2, 1967. Filed Dec. 1, 1969, Ser. No. 881,056
Int. Cl. H04n 1/24
U.S. Cl. 178—7.6 **15 Claims**



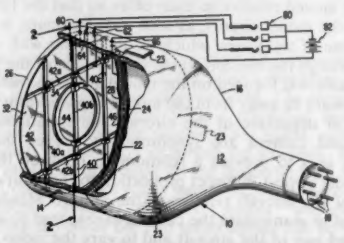
A scanner assembly for a facsimile transceiver in which three combination optical scanner and printer contact units are mounted on a specially designed timing belt trained about driven and idler pulleys. The belt comprises two narrow steel strips joined together by pin members which register with recesses in the pulleys. Each of the assemblies is detachable from the timing belt and includes means for separately adjusting the operating positions of the optical scanner and the printer contact with respect to the total assembly.

3,581,002

DISPLAY DEVICE FOR PROVIDING GRATICULES OF VARIOUS CONFIGURATIONS

Wellesley Jamison Dodds, Mt. Lakes, N.J., assignor to RCA Corporation

Filed Apr. 1, 1969, Ser. No. 811,861
Int. Cl. H04n 5/72
U.S. Cl. 178—7.84 **10 Claims**



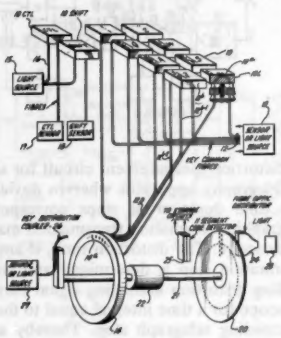
A novel display device including a means for displaying a visual image to the view of an observer and a means for

providing a changeable graticule in front of the visual image in the view of the observer. The means for providing a changeable graticule includes a plurality of transparent electrode pairs with a liquid crystal material contained therebetween for displaying the graticule. Connection means for electrically energizing selected ones of the electrode pairs are provided.

3,581,003
KEYBOARD

William C. Leone, Palos Verdes Estates, and Robert Lee Malone, Palos Verdes Peninsula, Calif., assignors to Ex Cell-O Corporation, Detroit, Mich.

Filed Mar. 15, 1968, Ser. No. 713,343
Int. Cl. H04l *15/16;, 17/02;* **B41j** *5/08*
U.S. Cl. 178—17 **8 Claims**

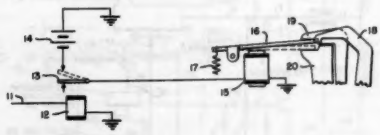


A keyboard for providing electrical output indications encoded in a preselected code in response to the operation of a key. Each key of the keyboard providing a light signal-transmitting path for transmitting light rays from a light source to an optical encoding element for transmission to a photoelectric means to provide the electrical output indications in accordance with a preselected code representative of an operated key. The keyboard includes gating circuit means for controlling the correct pattern of electrical output indications to be produced from the encoding element.

3,581,004
INVERTED SELECTOR MECHANISM

Arthur A. Hagstrom, Hoffman Estates, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Oct. 24, 1968, Ser. No. 770,159
Int. Cl. H04l *17/16*
U.S. Cl. 178—33 **2 Claims**

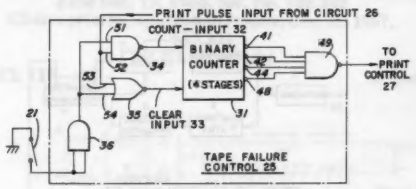


A selector mechanism including a line relay, a selector magnet, circuitry controlled by the line relay for energizing the selector magnet whenever the line relay is deenergized and vice versa, and means controlled by the selector magnet for producing a marking output whenever the selector magnet is deenergized and for producing a spacing output whenever the selector magnet is energized.

3,581,005
DELAYED ACTION TAPE FAILURE CONTROL FOR HIGH-SPEED TAPE PRINTER

John Fulton, Brookfield, Ill., assignor to Extel Corporation, Chicago, Ill.

Filed June 9, 1969, Ser. No. 831,516
Int. Cl. H04l *13/06*
U.S. Cl. 178—42 **4 Claims**

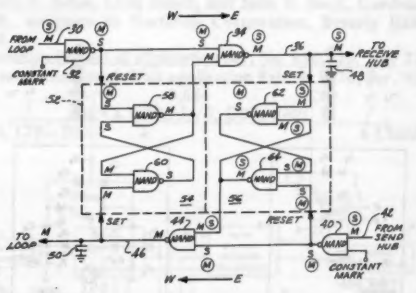


A delayed action tape failure control for a high-speed tape printer, tape punch, or like machine actuated by recurring pulse signals, comprising a NAND gate and a NOR gate connected to the count and reset inputs, respectively, of a binary counter; the print pulse signals are applied to one input of each gate and a tape presence detector switch, located ahead of the print or punch mechanism, is connected to the other input of each gate. As long as tape is present, the counter is maintained in cleared condition and machine operation continues; when tape is absent, the counter counts print pulses and machine operation is interrupted when a given count is reached.

3,581,006
DUPLEX CONTROL CIRCUIT

Jacob L. Wallace, Jr., Springfield, Va., assignor to The Susquehanna Corporation, Fairfax County, Va.

Filed Mar. 22, 1968, Ser. No. 715,402
Int. Cl. H04l *5/14*
U.S. Cl. 178—58 **7 Claims**

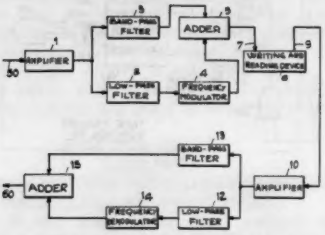


An example of the duplex control circuit is a circuit formed of two logic flip-flops connected between two channels of a half-duplex telegraph circuit. This duplex control circuit functions to prevent reflections or feedback of the transmissions into the inactive channel. Each channel is controlled by one of the flip-flops whereby the flip-flop controlling the inactive channel is set and locks this channel to a marking condition whenever a spacing signal is processed by the active channel and does not become reset until this spacing signal terminates at the input to the inactive channel.

3,581,007
MAGNETIC RECORDING AND REPRODUCING APPARATUS FOR COLOR TELEVISION SIGNALS USING A FREQUENCY MODULATED SUBCARRIER FOR THE TRANSMISSION OF THE COLOR INFORMATION

Pierre Cassagne, Asnieres, France, assignor to Compagnie Francaise De Television

Continuation of application Ser. No. 582,013, Sept. 26, 1966, now abandoned. This application Dec. 10, 1969, Ser. No. 880,484
Int. Cl. H04n 9/36
U.S. Cl. 178—5.4 1 Claim

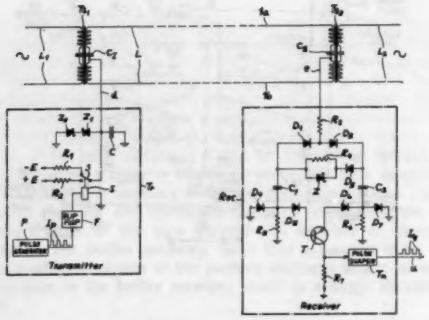


Magnetic recording and reproducing apparatus for a SECAM-type color television signal comprising a frequency modulated color subcarrier, wherein the color subcarrier is separated, brought to a constant amplitude and recorded together with either an auxiliary carrier frequency modulated by the lower frequency luminance components, or with the attenuated lower frequency luminance components themselves.

3,581,008
PULSE-TRANSMISSION SYSTEM

Giorgio Dal Monte, Milan, and Nicola Pitidis, Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.a., Milan, Italy

Filed Sept. 26, 1968, Ser. No. 762,752
Claims priority, application Italy, Sept. 27, 1967, 20935-A/67
Int. Cl. H04l 25/02
U.S. Cl. 178—63 10 Claims

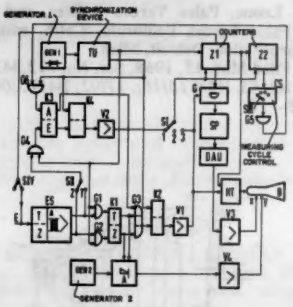


Telecommunication system in which counting pulses or other short input signals are transmitted over a line by respective reversals of polarity which, at the receiving end, are detected and translated into a train of output pulses at a cadence corresponding to that of the train of input pulses giving rise to the polarity reversals.

3,581,009
DISTORTION MEASUREMENT CIRCUIT

Erwin Schenk, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Sept. 22, 1967, Ser. No. 669,743
Claims priority, application Germany, Sept. 23, 1966, S106,065
Int. Cl. H04i 1/00
U.S. Cl. 178—69 5 Claims

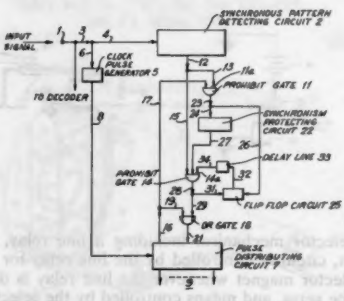


A time distortion measurement circuit for use in conjunction with telegraphy apparatus wherein deviations from the theoretical time duration of steps corresponding to high speed telegraphic information transmission may be displayed on an oscilloscope. The distortion time, if any, of each telegraph information step is determined and stored so that a corresponding distortion indicating signal may be applied to the oscilloscope for a time interval equal to the time duration of the succeeding telegraph step. Thereby a distortion indicating signal of sufficient time duration to effect visual display of step time distortion is applied to the oscilloscope. Counting devices are employed that are responsive to a transition between successive steps and, more particularly, to a change in polarity of the applied telegraph signal, to produce control signals corresponding to their count that are stored and applied to the oscilloscope until the succeeding transition occurs. An indication of the actual time duration of the steps, and consequently of the percentage error between the actual time duration and the theoretical fixed time duration of the steps, is thereby obtained.

3,581,010
FRAME SYNCHRONIZATION SYSTEM FOR SYNCHRONIZING THE FRAME OF A DIGITAL SIGNAL TRANSMISSION

Toshio Kobayashi, Yokohama-shi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 14, 1967, Ser. No. 682,807
Claims priority, application Japan, Nov. 18, 1966, 41-76012
Int. Cl. H04l 7/08
U.S. Cl. 178—69.5 6 Claims



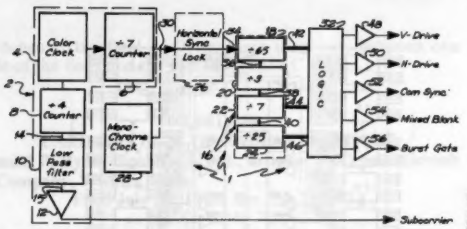
A digital signal pulse train is supplied to a detector which detects the synchronous pattern of the pulse train. A pulse

distributor distributes the digital signal pulse train under the control of the detected synchronous pattern by forcibly resetting the frame of the distributed digital signal pulses when the frame of the digital signal pulse train is nonsynchronous and providing a reset pulse for resetting itself independently of the forcible resetting at least once per frame of the digital signal pulse train. A gate circuit connected between the detector and the pulse distributor prohibits further forcible resetting of the pulse distributor until the next succeeding frame of the digital signal pulse train.

3,581,011
TELEVISION BROADCAST SYNCHRONIZING APPARATUS AND METHOD

Ronald C. Ward, Salt Lake City, and David T. Allen, Provo, Utah, assignors to Telemation, Inc., Salt Lake City, Utah

Continuation of application Ser. No. 677,286, Oct. 23, 1967, now abandoned. This application July 28, 1969, Ser. No. 848,142
Int. Cl. H04n 5/04
U.S. Cl. 178—69.5TV **25 Claims**

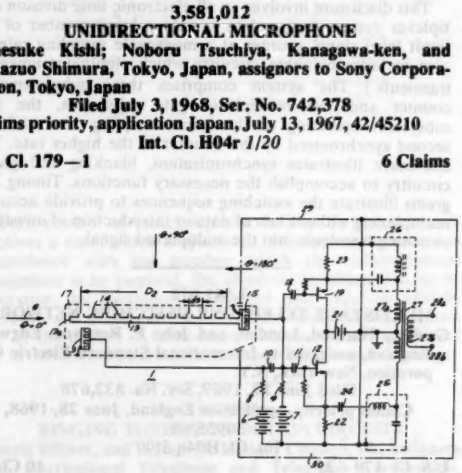


A high-quality television synchronizing system, including method and apparatus, which uses a high clock or oscillator frequency and causes, solely through division of frequency, each leading and trailing edge of all sync. generator output pulses to be accurately clock-derived. In this way, inter alia, very meaningful improvements in black and white, and color time base stability, including far better color subcarrier phase stability, are attained and need for time adjustment capability is removed. Superior sync. lock characteristics are also provided.

3,581,012
UNIDIRECTIONAL MICROPHONE

Kanesuke Kishi; Noboru Tsuchiya, Kanagawa-ken, and Kazuo Shimura, Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed July 3, 1968, Ser. No. 742,378
Claims priority, application Japan, July 13, 1967, 42/45210
Int. Cl. H04r 1/20
U.S. Cl. 179—1 **6 Claims**

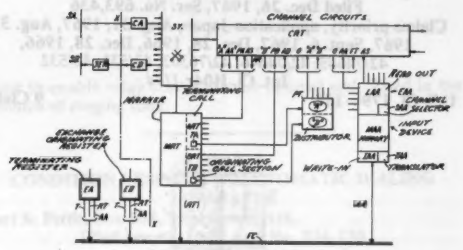


A unidirectional microphone in which a second order gradient microphone and a wave-type microphone are combined so as to obtain an improved directional microphone with the low frequency components obtained from the second order gradient microphone and the medium and higher frequency components being obtained from the wave-type microphone so as to obtain a composite output signal which has a uniform and narrow directive pattern and a smooth frequency response characteristic over a wide frequency range.

3,581,013
MOBILE RADIOTELEPHONE COMMUNICATION SYSTEM

Jean Jacques Muller, Garches, France, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 19, 1968, Ser. No. 785,105
Claims priority, application France, Dec. 21, 1967, 133,321
Int. Cl. H04g 7/04
U.S. Cl. 179—41 **10 Claims**

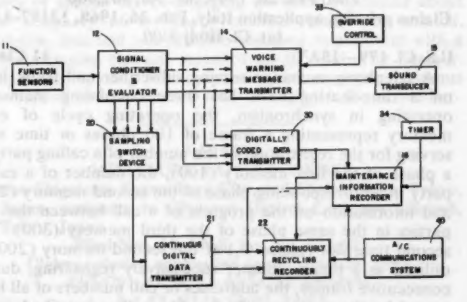


A mobile telephone system is provided with radio telephone and paging equipment which is serviced over a group of channels allotted to a fixed radio telephone station. The latter provides automatic communication between the customers of a public telephone ground network and mobile sets. A free channel is marked by a tone, to be taken in a telephone call. Paging call numbers directed to paging mobile sets are transmitted from the station if the required channel is free. If the channel is not free, these paging calls alternate with the radiotelephone communications. In order to more effectively use the equipment, the called paging numbers are stored and then transmitted in limited trains of numbers.

3,581,014
INTEGRATED SYSTEM FOR REPORTING AIRCRAFT DATA

Alvin R. Vogel, Los Angeles; Douglas A. Moore, Rolling Hills; Martin P. Folan, Long Beach, and John R. Buck, Gardena, Calif., assignors to Northrop Corporation, Beverly Hills, Calif.

Continuation-in-part of application Ser. No. 656,425, July 27, 1967, now abandoned. This application Feb. 9, 1970, Ser. No. 9,644
Int. Cl. G08b 3/10; G08g 5/00
U.S. Cl. 179—100.1 **6 Claims**



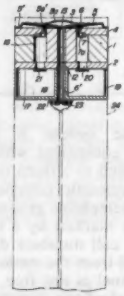
Various aircraft parameters are sensed by function sensors, the outputs of these sensors being fed to a signal conditioner and evaluator where the signals are processed and the mag-

nitudes of these various parameters evaluated. When the magnitude of any of these parameters is above or below certain predetermined limits, an output signal is fed to a transmitter which transmits a voice message indicating the out-of-limits condition. The occurrence of out-of-limit conditions for any of these parameters is also digitally encoded and recorded for future reference. Certain outputs of the signal evaluator and conditioner indicative of selected aircraft flight and operating conditions are continually fed to a digital data encoder where they are placed in suitable condition for recording in digital form and from where they are fed to a continually recycling recorder for recordation.

3,581,015
DYNAMIC MICROPHONE

Takeo Masuda, Tokyo, Japan, assignor to Aiwa Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1967, Ser. No. 693,436
Claims priority, application Japan, Aug. 31, 1967, Aug. 31, 1967, Sept. 6, 1967, Dec. 28, 1966, Dec. 28, 1966, 42/74645; 42/74646; 42/76302; 42/531; 42/532
Int. Cl. H04r *1/34*
U.S. Cl. 179—121 **9 Claims**



This specification discloses a novel dynamic microphone using a flat annular magnet formed of an anisotropic barium ferrite as a permanent magnet to establish a magnetic circuit. The present microphone is extremely flat and of an excellent tone quality, and it can be manufactured at low cost. Various modifications to the microphone of this type become easily possible, and therefore a variety of examples with unidirectional characteristics or other characteristics are disclosed in this specification.

3,581,016
TIME-SHARING TELECOMMUNICATION SYSTEM

Saverio Martinelli, and Giorgio De Varda, both of Milan, Italy, assignors to Societa Italiana Telecommunicazioni Siemens S.p.A., Milan, Italy

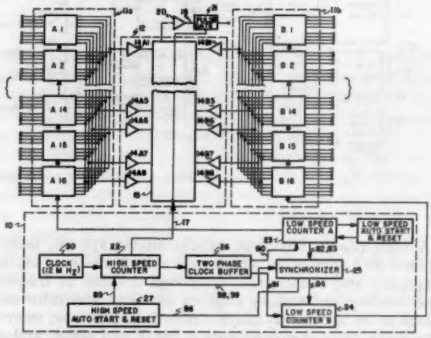
Filed Feb. 26, 1969, Ser. No. 802,486
Claims priority, application Italy, Feb. 26, 1968, 13197-A/68
Int. Cl. H04j *3/00*
U.S. Cl. 179—15AT **11 Claims**

A telephone exchange serving subscriber and trunk lines on a time-sharing basis has three circulating memories operating in synchronism, the operating cycle of each memory representing a frame of 100 phases or time slots serving for the registration of the number of a calling party in a phase of the first memory (100), the number of a called party in a corresponding phase of the second memory (200) and information on the progress of a call between the two parties in the same phase of the third memory (300). The second time slot (phase Φ_2) of the second memory (200) is utilized as a binary counter successively registering, during consecutive frames, the addresses or call numbers of all lines served by the exchange. Each address thus inscribed is entered, one frame later, in a buffer register (800) for the duration of the following frame; concurrently, the line switches of the station identified by that address are briefly closed to sample the line voltage for the presence or absence of loop current. Special provisions are made for the calling of an outgoing trunk identified by a first digit "O" in its three-digit address. Other phases (Φ_1, Φ_3, Φ_4) at the beginning of each frame are utilized for the automatic checking of the equipment, with instant substitution of a standby memory (500) for the monitoring memory (300) or for any one of the three digital sections of either address memory (100, 200), designed as identical modules, if such module is found to be defective.

3,581,017
ELECTRONIC MULTIPLEXER

Roger L. Stevens, Sierra Madre; Peter A. Putnam, Montebello, and Martin Sicona, San Jose, Calif., assignors to Aerojet-General Corporation, ElMonte, Calif.

Filed June 13, 1968, Ser. No. 736,835
Int. Cl. H04j *3/04*
U.S. Cl. 179—15A **7 Claims**



This disclosure involves an all electronic time division multiplexer system designed to sample a large number of millivolt level signal sources at a megacycle sampling rate. [It also includes blanking circuitry which eliminates unwanted transients.] The system comprises three subsystems, a counter and two multiplexer gate subsystem, the first subsystem operating at the basic sampling rate and the second synchronized by the counter at the higher rate. The disclosure illustrates synchronization, blanking and gating circuitry to accomplish the necessary functions. Timing diagrams illustrate the switching sequences to provide accurate multiplexing without loss of data or introduction of unwanted switching transients into the multiplexed signal.

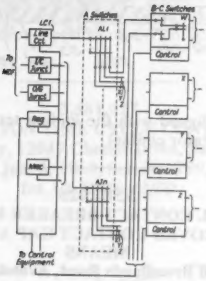
3,581,018
MULTISTAGE TELEPHONE SWITCHING NETWORK

Geoffrey Harland, London, and John P. Ronayne, Edgware, England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed June 12, 1969, Ser. No. 832,678
Claims priority, application England, June 28, 1968, 30935/68
Int. Cl. H04q *3/00*
U.S. Cl. 179—22 **10 Claims**

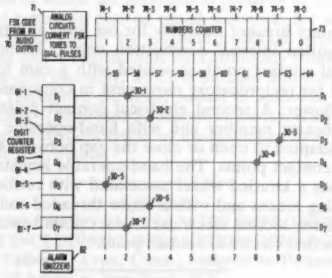
A telecommunications exchange in which connections are set up through cascaded stages (designated A, B, C & D) of coordinate switching matrices. Certain of the stages are paired in two-stage networks, and a number of these networks (four are disclosed) are used. The intermediate stages (B and C) of a four stage exchange are paired, and certain of the B stage switches handle only calls to and from lines, and

others handle only calls to and from junctions. The third or C stage mixes calls involved in traffic of either type. The



switches of the final or D stage are used only between one side of the links and the switches of the C stage.

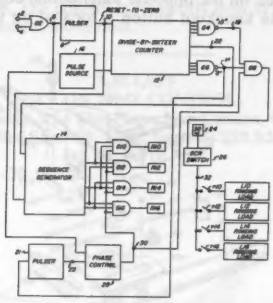
3,581,019
CARD CONTROL OF RADIO TELEPHONE
Donald P. Ryan, Bloomfield, N.J., assignor to Cessna Aircraft Company, Wichita, Kans.
Filed July 30, 1968, Ser. No. 748,813
Int. Cl. H04g *7/04*
U.S. Cl. 179—41 **3 Claims**



Card control of radiotelephone facility. A matrix circuit receives a card, which is apertured, punched or embossed in accordance with the number which the radiotelephone equipment is to respond, the channels in which it is to be operative, to complete transmitter and receiver circuits therefor, and disable channels not used and otherwise control use of the facility by authorized persons. Other features of the invention are disclosed in the specification and drawings.

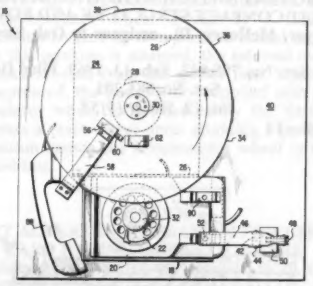
3,581,020
RINGING TONE DISTRIBUTION CIRCUITS
Morris Ribner, and Alfred M. Hestad, Chicago, Ill., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Aug. 22, 1969, Ser. No. 852,172
Int. Cl. H04m *1/26*
U.S. Cl. 179—84R **7 Claims**

A logic system is provided for supplying ringing tone in successive bursts of one-second duration to each of four bays. The system provides the tone in a repetitive cycle so that the load of only one bay is placed on the source at one time. The system provides a period between each one-second



burst to enable relay contacts to be opened and closed in the absence of ringing tone.

3,581,021
CONDITION RESPONSIVE AUTOMATIC DIALING APPARATUS
Carl S. Pettit, Box 164, Sweethome, Ark.
Filed June 3, 1968, Ser. No. 734,130
Int. Cl. H04m *1/44*
U.S. Cl. 179—90 **1 Claim**

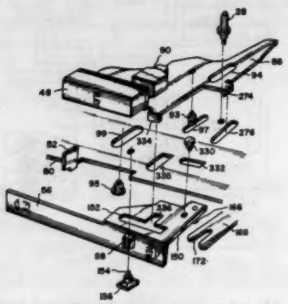


The disclosure relates to an automatic telephone dialing system wherein a driven rotary input member is rotated about a fixed axis adjacent the dial of a conventional telephone to, sequentially, rotate the dial in a clockwise direction and release the same for return to its initial rest position to dial a preselected multiple digit number. The rotation and release of the dial is effected by providing a plurality of spaced driven engaging elements positioned about the periphery of the input member which are rotated, seriatim, into and out of drive engaging relationship with a drive engaging element mounted on the dial. The number, length and spacing of the spaced drive engaging elements correspond to a preselected multiple digit telephone number.

3,581,022
MINIATURE TAPE RECORDER
Sadao Shigetomi, Sagamihara City, and Shoichi Saito, Tokyo, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan
Filed Nov. 12, 1968, Ser. No. 774,653
Claims priority, application Japan, June 29, 1968, 43/54791; 43/54792; 43/54793; 43/54794
Int. Cl. G11b *15/02, 23/02*
U.S. Cl. 179—100.2Z **6 Claims**

A miniature tape recorder having a flat elongated casing capable of being held in one hand of a user. A cassette mounting means is located on the front side of the casing

along a longitudinal edge thereof. An operating means, including a record pushbutton, a record-reproduction pushbutton, a stop pushbutton, and a slidable tape speed control button, is mounted on the opposite longitudinal edge of the casing. A cassette knockout button is located on the back side



of the casing in the proximity of the cassette mounting means, while a volume rotary knob, for actuating a volume control means, is located on the same side edge as the cassette mounting means with spacing from the knockout button.

3,581,023

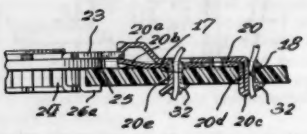
WAFER ROTARY SWITCH WITH STATOR PRINTED CIRCUIT CONTACT STRUCTURE AND ROTOR

Walter Meyer, McHenry, Ill., assignor to Oak Electro/Netics Corp.

Division of Ser. No. 798,923, Feb. 13, 1969. Filed Dec. 1, 1969, Ser. No. 881,201

Int. Cl. H01h *19/58*

U.S. Cl. 200—11 **1 Claim**



A printed circuit rotary switch with stator clips soldered thereon and having wiping surfaces spaced from the surface of the switch section. The rotor blade is mounted on a flanged body, in alignment with the wiper contacts and has legs extending through the rotor opening securing the rotor to the stator. The stator has spiral inductors for a tuner printed on one surface, with the beginning terminal of one inductor radially aligned with the ending terminal of the next and joined by a stator contact.

3,581,024

WAFER DISC ROTARY SWITCH WITH STATOR PRINTED CIRCUIT CONTACT STRUCTURE AND ROTOR

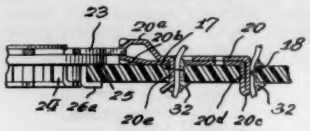
Walter Meyer, McHenry, Ill., assignor to Oak Electro/Netics Corp.

Filed Dec. 1, 1969, Ser. No. 881,202

Int. Cl. H01h *19/58*

U.S. Cl. 200—11 **7 Claims**

A printed circuit rotary switch with stator clips soldered thereon and having wiping surfaces spaced from the surface of the switch section. The rotor blade is mounted on a flanged body, in alignment with the wiper contacts and has legs extending through the rotor opening securing the rotor to the stator. The stator has spiral inductors for a tuner printed on one surface, with the beginning terminal of one inductor radially aligned with the ending terminal of the next and joined by a stator contact.



3,581,025

ELECTRICAL CONTACT BREAKER MECHANISMS WITH IMPROVED CONTACT GAP ADJUSTMENT MEANS

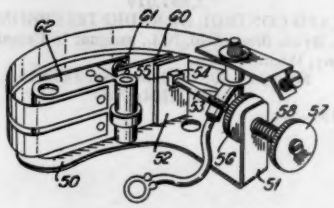
Roland J. Yeo, 40 Broadlands Road, Avondale, Salisbury, and Jean E. Colley, 18, Coghlan Road, Greendale, Salisbury, Rhodesia

Filed Jan. 2, 1969, Ser. No. 788,564

Claims priority, application Rhodesia, Jan. 15, 1968, 408/67

Int. Cl. H01h *19/00, 19/62, 1/50*

U.S. Cl. 200—19 **2 Claims**



A contact breaker assembly for use with a distributor of a spark ignited internal combustion engine including a first electrical contact point associated with a cam follower and adapted for reciprocatory movement in consonance with the cam follower. A second electrical contact point associated with a bearer member and with hand-operable adjustment means adapted to open or close the gap between the first and second contact points. The hand-operable adjustment means comprises a knurled wheel associated with resiliently biased restraining means and with a screw threaded rod adapted to progress the second electrical contact point towards or away from the first electrical contact point.

3,581,026

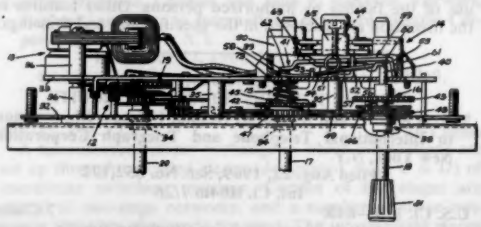
TIMER WITH VISUAL INDICATOR FOR PERIOD OF OPERATION

Gerhard K. Losert, Louisville, Ky., assignor to General Electric Company

Filed Nov. 12, 1968, Ser. No. 774,718

Int. Cl. H01h *7/08, 43/10*

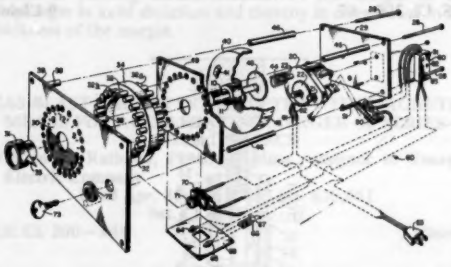
U.S. Cl. 200—38R **10 Claims**



A timer includes a switch and a manually adjustable shaft longitudinally movable between a set and an unset position.

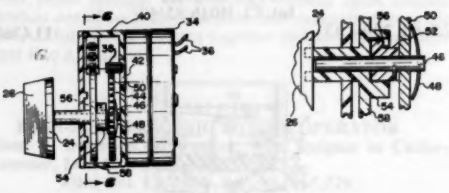
There is a motor-driven gear for releasing the shaft from its set position to provide time-controlled actuation of the switch. A first visual indicator is movable with the gear to show the proper termination time for a desired period of switch actuation. The shaft is movable relative to the gear when the shaft is in its set position to determine the period of switch actuation. A second visual indicator is movable with the shaft. The first and second visual indicators together show when the desired period of switch actuation has been set.

3,581,027
PUSH BUTTON TIME CYCLE CONTROLLER
Herbert F. Lindsay, 12047 Chester Drive, Baton Rouge, La.
Filed Jan. 6, 1969, Ser. No. 789,288
Int. Cl. H01h *43/00*
U.S. Cl. 200—38 **10 Claims**



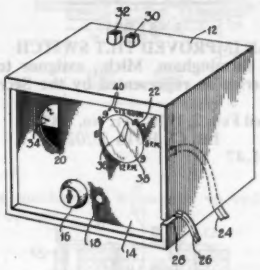
A pushbutton time cycle controller by virtue of which operations can be programmed, conducted, or carried out according to definitely timed sequences usually arranged over a 12-hour or 24-hour period. The controller comprises the combination of a dial face pushbutton assembly, the pushbuttons of which are arranged in patterns or orbitals for preselected setting in desired timed sequence, for activation of an electrical circuit by physical coaction between the pushbuttons and a displaceable synchronously rotating cam-disc or cam-disc assembly, which is brought into contact with a pressure responsive electrical switch in response to push-button settings. The pressure responsive electrical switch performs a preselected operation by energizing an external electrical circuit, or circuits.

3,581,028
LIQUIDIZER TIMER JOGGER WITH IMPROVED DRIVE MEANS INCLUDING LOST MOTION CONNECTION
Bruno M. Valbona, Avon, Conn., assignor to Dynamics Corporation of America, New York, N.Y.
Filed Nov. 20, 1969, Ser. No. 878,432
Int. Cl. H01h *7/08, 43/10*
U.S. Cl. 200—38 **15 Claims**



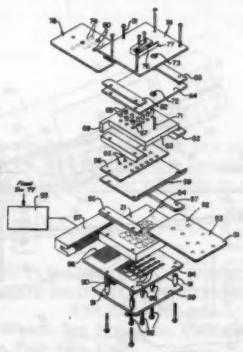
An electrically powered liquidizer controlled by a timer-jogger switch means actuated by a lost motion between a manual control and a driven slip clutch member when the control is turned in one direction to energize the liquidizer and a timer drive member without relative lost motion, and turned in the opposite direction with lost motion to manually energize the liquidizer continuously or intermittently for a period of time which, at will, can be a long or momentary period of time. The control is resiliently held in OFF position against inadvertent movement.

3,581,029
TV ON TIME CONTROL
Douglas G. Noiles, 114 Elm Place, New Canaan, Conn.
Filed Sept. 10, 1968, Ser. No. 758,820
Int. Cl. H01h *7/08*
U.S. Cl. 200—38 **21 Claims**



A control comprising a securable case having an internal outlet into which a TV set may be plugged with the TV set plug secured within the case. ON and OFF pushbuttons are provided. When the ON button is depressed, the TV set may be operated for up to a predetermined total time. During this time, an accumulator wheel driven by a timing motor through a clutch rotates up to a predetermined angular position. When this position is attained, the internal outlet of the device is disconnected from the power line. When the OFF button is depressed, the outlet is not supplied with power and the accumulator wheel is not driven by the timing motor. Each 24 hours a reset wheel upon attaining a predetermined angular position causes the accumulator wheel to be reset to its initial position.

3,581,030
MAGNET ACTUATED MECHANISM FOR USE WITH CARD HAVING MAGNETIC AREAS
Bruce S. Sedley, Glendale, Calif., assignor to H. O. Bohme, Inc., Westbury, N.Y.
Filed Jan. 2, 1969, Ser. No. 788,372
Int. Cl. H01h *43/08*
U.S. Cl. 200—46 **41 Claims**



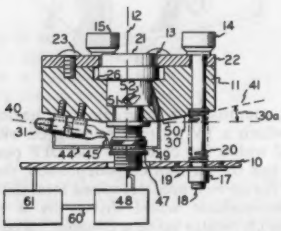
A magnetic actuated switch for use with a data card having a number of magnetic areas arranged in characteristic pattern. The switch includes a slot into which the card can be in-

serted so that its magnetic elements are in juxtaposition with vertically oriented reed switches which are also arranged in the same characteristic pattern as its elements. One contact of the reed switch is magnetized in accordance with the polarity of the data card's magnetic areas and the other contact is magnetized in accordance with the polarity of a fixed magnetic biasing means included in the switch. The reed switch is closed if the two appropriate polarities are opposite each other. The switches can be connected in any suitable matrix pattern such as for binary coded decimal readout for reading data on the card or for the operation of a device such as a relay or door lock. Alternatively a dual coded card may be used where one code is read by a matrix of switches and the other code performs an unlocking function by means of an associated magnetically operated mechanism.

3,581,031
AN IMPROVED TILT SWITCH

Michael Brian, Birmingham, Mich., assignor to the United States of America as represented by the Secretary of the Navy

Filed Feb. 2, 1970, Ser. No. 7,496
Int. Cl. H01h *35/02*
U.S. Cl. 200—61.47 **6 Claims**

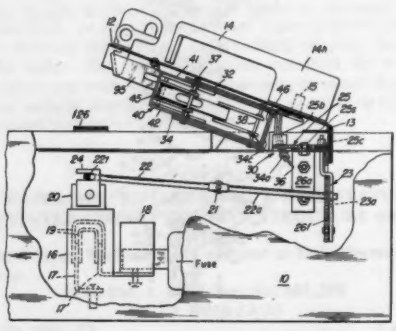


An improved tilt switch having a plurality of mercury switches disposed about a housing and mounted at an angle with respect to the level or horizontal, and having a resilient adjusting means for coupling the housing to a member whose tilt is to be measured.

3,581,032
ENCLOSED SWITCH WITH COVER-CARRIED OPERATOR AND INTERLOCK MECHANISM

Paul M. Christensen, West Orange, N.J., assignor to Arrow-Hart, Inc., Hartford, Conn.

Filed Aug. 11, 1969, Ser. No. 848,948
Int. Cl. H01h *9/20*
U.S. Cl. 200—50 **27 Claims**



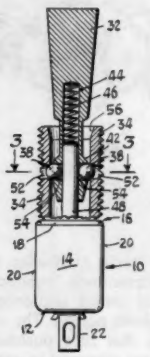
An enclosed switch, of the type wherein the switch-operating handle is mounted on a hinged cover of a box, has snap action actuating mechanism and interlocking mechanism which are also mounted on the cover, the snap action mechanism being operably connected with the switch-operating mechanism at all times so that the contacts can be disengaged while the cover is open and the cover can be closed while the contacts are either engaged or disengaged; but, the switch contacts can not be moved into engagement while the cover is open without disabling the interlock.

A turnable handle operates snap action means having an actuated element operating transversely of the enclosure to actuate the operating mechanism and switch contacts which move in different planes at right angles thereto in the enclosure.

3,581,033
TOGGLE SWITCH

Frank J. Plumb, Prospect, Conn., assignor to J-B-T Instruments, Inc., New Haven, Conn.

Filed May 19, 1969, Ser. No. 825,809
Int. Cl. H01h *13/28*
U.S. Cl. 200—67 **9 Claims**

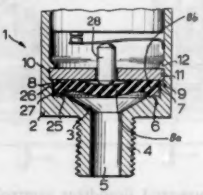


A toggle switch which has an operating lever extending through and pivoted in a threaded mounting barrel. In a longitudinal bore of the lever there is a compression spring and a plunger the latter being acted on by the spring and engaging a movable switch contact. The pivotal mounting of the lever comprises two ball bearings disposed at opposite sides of the lever and carried respectively in pairs of registered sockets and the lever and barrel, said sockets being external to the longitudinal bore of the lever whereby space is readily available in the bore for the plunger and spring.

3,581,034
FLUID-PRESSURE-ACTUATED SWITCH

Karl Schupp, Pforzheim, and Hans Weismann, Stuttgart-Feuerbach, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 7, 1969, Ser. No. 805,333
Claims priority, application Germany, June 12, 1968, P 17 65 576.4
Int. Cl. H01h *35/40*
U.S. Cl. 200—83 **11 Claims**



A fluid-pressure-activated switch has a housing provided with an internal annular recess for the marginal portion of an

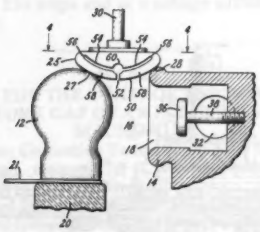
elastomeric diaphragm whose central portion bulges into the pressure chamber of the housing. The pressure chamber is located opposite a second chamber which receives one or more contacts. The diameter of the annular recess is equal to or smaller than the diameter of the diaphragm and the axial length of the recess is slightly smaller than or at most substantially equal to the thickness of the marginal portion of the diaphragm. The marginal portion includes an axially extending annular bead whose thickness is included in the thickness of the marginal portion and which has a lower resistance to deformation than the material of the remainder of the diaphragm so as to be moved in spite of unevenness on an associated sideface into tight sealing engagement with that face bounding one axial end of the recess when pressure is introduced into the pressure chamber, causing the central portion of the diaphragm to flatten out and to effect radial expansion of the diaphragm which, being resisted by contact of the diaphragm edge with the bottom wall of the contact of the diaphragm edge with the bottom wall of the recess, results in yielding of the material of the margin of the diaphragm in axial direction and thereby in an increase in the thickness of the margin.

3,581,035

GAS-BLAST CIRCUIT INTERRUPTER WITH MAGNETIC MEANS FOR ACCELERATING MERGER OF SERIES-RELATED ARCS

William H. Rathbun, Pittsfield, Mass., assignor to General Electric Company

Filed Apr. 30, 1969, Ser. No. 820,461
Int. Cl. H01h *33/70*
U.S. Cl. 200—148 **2 Claims**



Discloses a gas-blast circuit breaker comprising two spaced-apart stationary contacts and a movable bridging contact extending therebetween. The bridging contact has an arc-running surface facing the space between the stationary contacts and a centrally located gap that divides the arc-running surface into two spaced-apart sections. Two slots in the bridging contact extend in opposite directions from the gap generally parallel to and behind the arc-running surface. This configuration of the bridging contact is such that the current paths through the two arcs formed upon contact separation are of such configuration that magnetic forces are developed for driving the arcs together and accelerating their merger into a single arc.

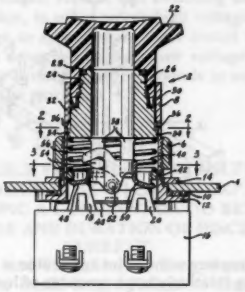
3,581,036

PUSH-PULL ELECTRIC SWITCH OPERATOR

William G. Dennison, Milwaukee, Wis., assignor to Cutter-Hammer, Inc., Milwaukee, Wis.

Filed Oct. 13, 1969, Ser. No. 865,726
Int. Cl. H01h *3/12*
U.S. Cl. 200—172 **6 Claims**

A single return spring biases a switch operator against movement to either operating position by being compressed against either an internal shoulder formed in the operator housing or against the inner edge of an inserted ring. A pair of projections on the movable operator nest between a pair of switch actuating levers to bear directly downward upon one lever in the push direction and to rock the other lever downward in the pull direction. The levers are designed with



a two-to-one mechanical advantage to reduce the stroke length of the operator.

3,581,037

EXTENSION DEVICE FOR TOGGLE SWITCHES

Richard A. Schiffelbein, 226 Freeman, Topeka, Kans.

Filed Oct. 15, 1969, Ser. No. 866,602
Int. Cl. H01h *3/04*
U.S. Cl. 200—172A **1 Claim**

An extension device for connection to a pivotal toggle of a wall located toggle switch to facilitate operation of the switch by a small child or another who is unable to reach to the toggle of the switch.

3,581,038

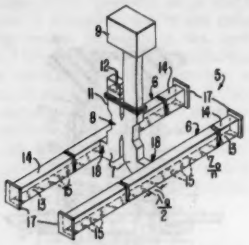
MICROWAVE APPLICATOR EMPLOYING A BROADSIDE RADIATOR IN A CONDUCTIVE ENCLOSURE

Norman H. Williams, San Francisco, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed May 2, 1969, Ser. No. 821,176
Int. Cl. H05b *9/06, 5/00*
U.S. Cl. 212—10.55 **8 Claims**

A microwave applicator for treating material with microwave energy is disclosed. The applicator includes a relatively large conductive enclosure containing a large

broadside microwave radiating antenna disposed for directing the radiated microwave energy onto the load of lossy material for treating same. The applicator is particularly useful for treating relatively large amounts of lossy material.



3,581,039

METHOD OF ONE-SIDE ARC WELDING AND BACKING MATERIAL THEREFOR

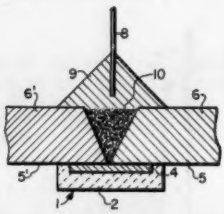
Fumiaki Kanzaki; Yoshio Kozakura; Kozo Akahide, Chiba-shi, and Tamotu Suzuki, Shimizu-shi, Japan, assignors to Kawasaki Steel Corporation, Kobe-shi, Japan and Nippon Kokan Kabushikikaisha, Tokyo, Japan

Filed Oct. 16, 1968, Ser. No. 767,962

Claims priority, application Japan, Oct. 16, 1967, Dec. 13, 1967, 42/66,420;42/79,480

Int. Cl. B23k *9/18*

U.S. Cl. 219—73 **17 Claims**



A method for welding steel plates and the like from one side, and a backing material therefor are provided which yields welds of exceptional quality, uniformity, and control. The weld backing material comprises a rigid channeled portion, containing an elastic mineral fiber composite in the channel, where the depth of the channel and the thickness of the fiber composite are determined by the following formula:

$$D=\frac{\rho c \text{ min.}}{\rho i}(d+m)$$

where D is the thickness of the composite, d is the depth of the channel, ρc min. is the minimum compressed volumetric specific gravity of the composite, ρi is the initial volumetric specific gravity of the composite, and m is the maximum misalignment of the plates to be welded. Welding is accomplished by compressing the backing material along the back of the joint to be welded and welding from the opposed side.

3,581,040

FORMING OF THIN METAL FILAMENTS

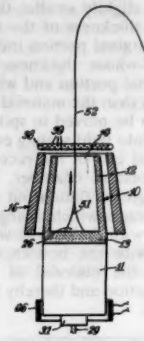
James W. Halley, Chesterton, Ind., assignor to Inland Steel Company, Chicago, Ill.

Filed June 11, 1969, Ser. No. 832,201

Int. Cl. H05b *5/00*

U.S. Cl. 219—7.5 **12 Claims**

This disclosure deals with an apparatus and process for forming thin metal filaments from liquid metal. An electrically conductive metal is placed in a crucible having an opening therein, the metal either having been previously heated to a liquid state or being so heated while in the crucible. A coil is positioned adjacent the metal and a current pulse is passed through the coil. The current flow generates an intense magnetic field which compresses or squeezes the metal, causing the metal to be forced out of the magnetic field through the opening in the crucible in the form of an elongated filament.



3,581,041

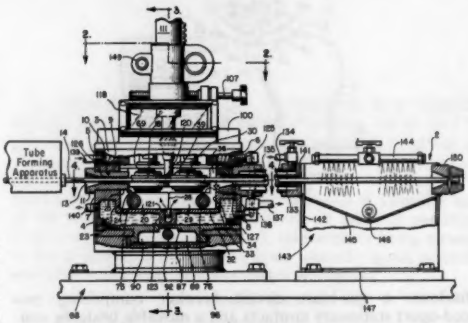
WELD BOX FOR TUBE FORMING MILL

Glenn F. Balfanz, Jr., 3912 Hampton Ave., Western Springs, Ill.

Filed Mar. 28, 1969, Ser. No. 811,496

Int. Cl. B23k *9/02*

U.S. Cl. 219—60 **10 Claims**



A weld box having laterally spaced walls with inlet and outlet ports through which a tube to be welded passes, preweld and postweld rollers mounted in the box and adjustable with respect to the welding rod to hold the tube accurately aligned with the rod and prevent the tube from twisting, the rollers rotatable on bearings which are isolated electrically from the rollers to prevent their destruction, the box provided with an inert gas diffuser which is located beneath the weld area and the inlet and outlet having gas outlets to protect the tube from atmospheric contaminants upon entering and exiting the weld box. The box has a tube cooling chamber and a spray trough to cool the tube when it exits the weld box.

3,581,042

UNDERWATER WELDING METHOD

Frank J. Pilia, Short Hills, N.J., assignor to Ocean Systems Incorporated, Reston, Va.

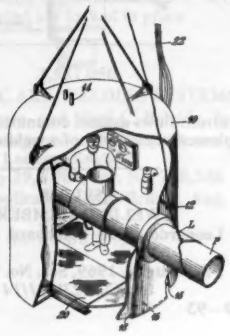
Continuation-in-part of application Ser. No. 664,784, Aug. 31, 1967. This application June 19, 1969, Ser. No. 839,778

Int. Cl. B23k *9/16*

U.S. Cl. 219—61 **5 Claims**

The invention provides a method of welding heavy metal sections located deep under water without having to raise the

sections to the surface. The method consists of lowering a chamber having an open bottom until it encloses the area to be worked upon. Preferably a pressurized gas is introduced into the chamber as it is being lowered in order to prevent the water from rising beyond a certain level which is maintained in a dry condition. After the chamber is set in place, a



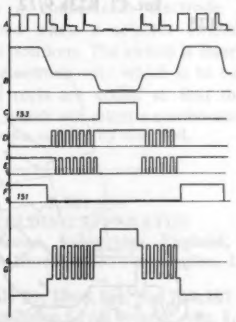
pressurized gas is introduced to displace the remaining water in the chamber. Thereafter the chamber atmosphere is preferably maintained in a substantially inert condition and the weld made with a nonconsumable electrode-inert gas-welding apparatus operating with a 1/64- to ¼-inch arc length at 85 to 250 amps and at a voltage sufficient to maintain a stable arc.

3,581,043

APPARATUS FOR THE CONTROL AND REGULATION OF THE WORK GAP OF AN ELECTROEROSION MACHINE

Werner Ullmann; Costantino Tadini, and Ehsan Salim, Locarno, Switzerland, assignors to A. G. fur Industrielle Elektronik AGIE, Locarno, Switzerland

Filed July 9, 1968, Ser. No. 743,362
Claims priority, application Switzerland, July 11, 1967, 9820/67
Int. Cl. B23p *1/14*
U.S. Cl. 219—69 **10 Claims**



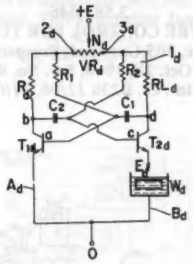
A circuit arrangement for the control and regulation of the width of a work gap of an electroerosion machine is disclosed. An electrical signal, the magnitude of which is indicative of the condition of the work gap, is fed to the input of a circuit arrangement which comprises a plurality of parallel switching stages, each responsive to different magnitudes of the electrical signal, the outputs of the circuit arrangement being at least partially coupled with a feed device for the work gap. A particular level of an electrical signal derived from the conditions of the work gap is associated with each of the switching stages. Hence, one switching stage responds to noload operation, in other words high voltage at the work gap, another stage to approximate short circuit conditions at the work gap, in other words, very low voltage at the work gap, and a further switching stage responds to normal operating conditions at the work gap.

3,581,044

CONTINUOUSLY VARIABLE POWER SUPPLY FOR ELECTRIC DISCHARGE MACHINES CAPABLE OF MAINTAINING A CONSTANT RATIO BETWEEN AMPLITUDE AND DURATION OF DISCHARGE CURRENT

Daisaku Watari, and Tosio Morita, Kasuya-gun, Japan, assignors to Seibu Denki Kogyo Kabushiki Kaisha, Kasuya-gun, Japan

Filed Oct. 22, 1968, Ser. No. 769,545
Claims priority, application Japan, Nov. 2, 1967, 42/92847
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 **9 Claims**



Power supply means for applying continuously variable power across the spark electrode-to-workpiece circuit of an electric discharge machine. The spark electrode is connected in one branch of a multivibrator circuit, and control means are provided for continuously varying the amplitude of the current flowing through said branch while maintaining constant the ratio of the amplitude of this current flow to the duration of said flow. The control means comprises a variable resistor the ends of which are connected across the corresponding ends of the two branch circuits of the multivibrator circuit with the sliding piece connected to one terminal of the voltage source.

3,581,045

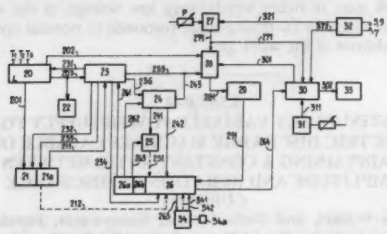
DIGITALLY CONTROLLED ELECTROEROSION MACHINE

Rudolf Panschow; Herbert Russbuelt, Hannover; Volker Suhr, Garbsen, Germany, and Werner Ullmann, Locarno, assignors to A G fur Industrielle Elektronik AGIE, Locarno, Switzerland

Filed Nov. 7, 1968, Ser. No. 774,080
Claims priority, application Switzerland, Nov. 14, 1967, 15863/67
Int. Cl. B23p *1/12*
U.S. Cl. 219—69 **12 Claims**

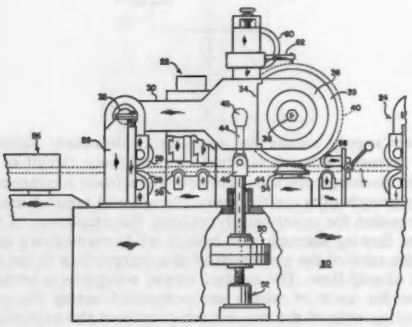
A program-controlled electroerosion machine is described having a novel numerical control arrangement incorporating a computer interconnected with novel supporting and controlling apparatus. The subject inventive control arrangement operates so as to detect from an information-recording medium a desired travel path of relative movement between the electrode and workpiece and, from such detected information, digital pulses are produced and applied to incremental

drive means such as stepping motors to effect the relative movement. The subject invention incorporates the provision of a reverse storage means incorporated to receive the digital drive pulses and store the same in a sequential manner. In the event of a short circuit or other disturbance at the work gap,



the novel reverse storage means causes relative movement to be effected in a reverse fashion to retrace the desired path of movement until the disturbance is eliminated. Subsequent thereto, normal forward operation of the control apparatus proceeds.

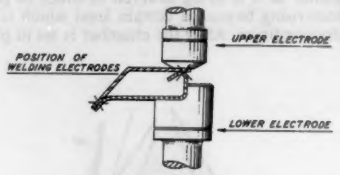
3,581,046
PRESSURE CONTROL FOR TUBE MILL
Charles E. Letsche, 505 Garwood, Prospect Heights, Ill.
Filed Oct. 28, 1968, Ser. No. 808,711
Int. Cl. B23k *11/06, 31/06*
U.S. Cl. 219—82 **6 Claims**



An improved tube mill generally employed in the production of steel tubing by the continuous electric resistance welding of an axially extending seam cleft in a cylindrical tube length formed from a continuous length of metal strips, and directly responsive fluid pressure means to maintain a constant pressure relationship between the welding element and the support means for said tubes to produce uniform welds in said tubing.

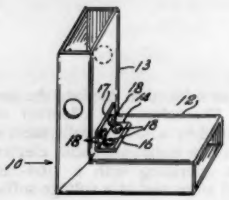
3,581,047
SPOT WELDING PROCESS
James W. Mitchell, Jr., Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed May 14, 1969, Ser. No. 824,635
Int. Cl. B23k *11/30*
U.S. Cl. 219—91 **2 Claims**

A process for the production of a hollow, stiff, noncircular fabricated steel structural member in which the assembly is accomplished by spot welding. The critical spot weld in this assembly is accomplished by causing the welding current to flow along a sheet metal member then through the sheet metal member and supporting the sheet metal member along



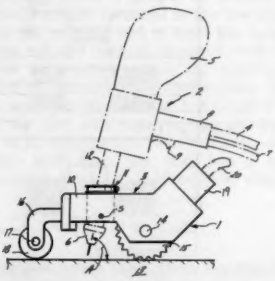
which the current flows against columnar collapse by contact with a complementary surface of a welding electrode.

3,581,048
WELDED MEMBER
Stephen V. Leonardo, 1128 Blanchard St., Downers Grove, Ill.
Filed Aug. 8, 1969, Ser. No. 848,584
Int. Cl. B23k *11/14*
U.S. Cl. 219—93 **1 Claim**



My metal crotch weldment is L-shaped and bent to form substantially horizontal and vertical portions, each with nibs adapted to be spot welded to the substantially horizontal and vertical portions of a bent metal tubing. When my L-shaped crotch weldment is positioned with the nibs against the substantially horizontal and vertical portions of a bent tubing and an active electric spot welder is applied to said weldment, the heat therefrom to the nibs causes the nibs to flow into fusion with said portions for retaining the portions of the tubing in fixed spaced position.

3,581,049
SEMIAUTOMATIC WELD APPARATUS WITH MEANS FOR CHANGING ELECTRODE ANGULAR DISPOSITION
Lou C. Creith, Allentown, Pa., assignor to Olin Corporation
Filed Nov. 12, 1969, Ser. No. 875,991
Int. Cl. B23k *9/12*
U.S. Cl. 219—125 **12 Claims**



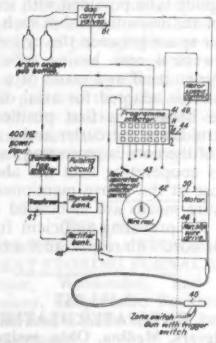
A device for varying the angle of inclination between a welding torch and a workpiece. The device is employed in a semiautomatic welding apparatus which includes means for guiding a welding torch along a weld seam at a predetermined rate. The device comprises two cylinders each having

a hole bored through it end to end, with the longitudinal axis of the bore canted with respect to the longitudinal axis of the cylinder. One cylinder fits within the bore of the other and the welding torch is placed in the bore of the inner cylinder. The angle at which the welding torch is inclined to the workpiece can be varied by rotating the cylinders with respect to each other and with respect to the welding torch barrel. After obtaining a desired angle of inclination, both the cylinders and the torch barrel are locked in place.

3,581,050
ELECTRIC ARC-WELDING SYSTEMS

Kenneth William Brown, and Nigel C. Balchin, both of Cambridge, England, assignors to National Research Development Corporation, London, England

Filed July 29, 1968, Ser. No. 748,536
Claims priority, application Great Britain, Aug. 1, 1967, 35204/67
Int. Cl. B23k 9/00
U.S. Cl. 219—130 **9 Claims**



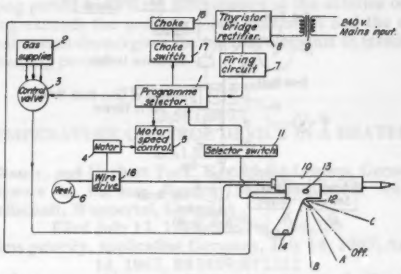
Different preselected combinations of the values of welding parameters in a consumable electrode arc-welding process are obtained when a selector switch is moved through its different positions. The switch is inserted into the hub of the reel of electrode wire which is to be fed to the welding torch. The reels are coded so that the switch is moved to a position which will select a combination of values appropriate for the wire carried by that reel.

3,581,051
WELDING APPARATUS

Kenneth William Brown, Cambridge, England, assignor to National Research Development Corporation, London, England

Filed July 29, 1968, Ser. No. 748,387
Claims priority, application Great Britain, Aug. 1, 1967, Feb. 29, 1968, Mar. 8, 1968, 35,247/67; 9,906/68; 11,429/68
Int. Cl. B23k 9/10
U.S. Cl. 219—131 **10 Claims**

In a consumable electrode arc welding process different combinations of the various parameters (open circuit arc voltage, wire feed speed, series inductance, shielding gas) are stored on a plug board by interconnecting each input bus with preselected output buses. The input buses are connected through a selector switch to a voltage source. As the selector switch is moved through its different positions a voltage is applied to the different input buses in turn. The output buses

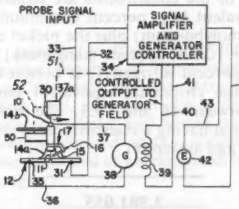


are connected to relays which control the selection of the different parameters.

3,581,052
SHIELDED ARC WELDING CONTROL SYSTEM

Rex W. Milton, Houston, Tex., assignor to Bauer & Associates, Inc.

Continuation-in-part of application Ser. No. 813,436, Apr. 4, 1969, now abandoned. This application June 18, 1969, Ser. No. 834,291
Int. Cl. B23k 9/10
U.S. Cl. 219—131 **10 Claims**



A feedback control system responsive to the ion density in the arc envelope of a welding electrode. The sensing end of a potential gradient probe is positioned in the arc envelope, and a signal is developed in the probe that is proportional to the position of the arc with respect to the workpiece. The induced signal is transmitted to a signal amplifier which responds to signal deviations from a reference signal position of the probe. The output signal from the amplifier controls the degree of field excitation applied to an electrical-welding generator field winding from an exciting source. The amplifier output signal may also be used to control the rate of welding electrode feed as well as the rate of welding head travel. The variable output voltage of the welding generator is connected between the welding electrode and the workpiece to directly control the position of the arc. In this way the output voltage of the welding generator is responsive to the potential gradient of the arc and correctly positions the arc for depositing weld metal on the workpiece.

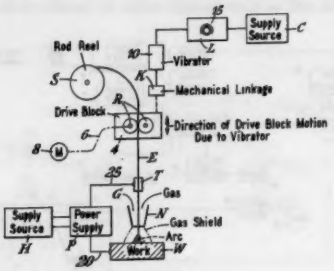
3,581,053
SYNCHRO-ARC METAL TRANSFER

August F. Manz, Union, N.J., assignor to Union Carbide Corporation

Filed Dec. 5, 1967, Ser. No. 688,157
Int. Cl. B23k 9/00
U.S. Cl. 219—137 **7 Claims**

Electric arc working apparatus and process for controllably transferring metal from a consumable electrode to a workpiece by applying recurrent power pulses to said elec-

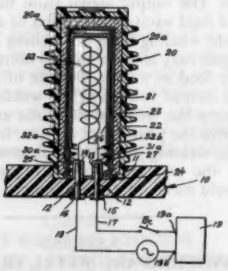
trode while oscillating said electrode at a multiple frequency relative to the power pulse recurrence frequency, and selectively displacing the phase between said power pulses and said electrode oscillations.



3,581,054
WELDING ELECTRODE
Jarl Allan Bjorkroth, Avesta, Sweden, assignor to Avesta Jernverks Aktiebolag, Avesta, Sweden
Filed Sept. 24, 1969, Ser. No. 860,846
Claims priority, application Sweden, July 27, 1965, 9876/65
Int. Cl. B23k *35/22*
U.S. Cl. 219—146 **7 Claims**

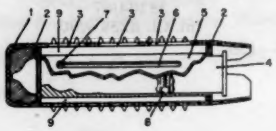
A coated electrode for electric arc welding having a core comprising 0.01—0.05 percent carbon, 0.1—0.9 percent silicon, 0.2—2.5 percent manganese, 14.5—18.0 percent chromium, 3.5—6.0 percent nickel, 0.1—2.2 percent molybdenum, 0.02—0.12 percent nitrogen and the remainder iron. The proportion of the constituents are adjusted so that the chromium equivalent (e.g. percent chromium + percent silicon + percent molybdenum) plus the nickel equivalent (e.g. percent nickel + [0.5 × percent manganese] + [30 × (percent carbon + percent nitrigen)]) is between 24.5 and 27, and 1.4 times the chromium equivalent minus the nickel equivalent is between 16 and 19.3. The welding electrode yields a weld metal having a microstructure consisting of ferrite, martensite, and austenite.

3,581,055
CURLING BOBBIN AND HEATER
Tomio Makino, Tokyo, Japan, assignor to Nichiei Denki Sangyo K.K.
Filed June 3, 1968, Ser. No. 734,095
Int. Cl. A45d *4/12, 2/36;* **H05b** *1/00*
U.S. Cl. 219—222 **8 Claims**



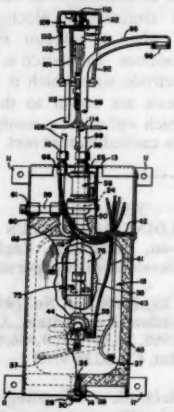
A curling bobbin and heater assembly includes a bobbin having an outer cylinder with a plurality of radial projections for twining hair, an intermediate cylinder formed of heat storing material, such as paraffin or polycarbonate, and an inner cylinder formed of a material of high thermal conductivity. The inner and outer cylinders are attached by means of an inwardly directed flanged portion on the outer cylinder. The inner cylinder closely fits around and receives a cylindrical electric-heating element is detachable from a base member which includes terminal pins which are received in corresponding sockets on the heating element. The heating element is detachably secured to the inner shell of the bobbin so that, is desired, the heating element and bobbin can be removed from the base member as a unit.

3,581,056
HAIR CURLER HAVING A HIGH HEAT STORAGE CORE TELESCOPICALLY MOUNTED THEREIN
Richard Djenner, Holte, Denmark, assignor to Olaf Bendik Elmer, Copenhagen, Denmark
Filed Apr. 17, 1969, Ser. No. 817,006
Claims priority, application Denmark, Apr. 19, 1968, 1740/68
Int. Cl. A45d *2/24*
U.S. Cl. 219—222 **4 Claims**



Hair curler including a cylindrical wall made of plastic material and a guide tube provided with stop means adjacent each end thereof and mounted within such cylindrical wall so as to form an air space between the cylindrical wall and the guide tube. A central core having substantially the same length as the curler itself and made of a material having a large specific heat is adapted for axial displacement within the guide tube between a first position in which it is completely inserted into the curler and a second position in which one end of the core is projecting from the curler. The core has means cooperating with the above end stops for stopping the core at the above mentioned first and second positions. Pressure means are associated with the core and the guide tube for providing sufficient friction against displacement of the core with respect to the tube.

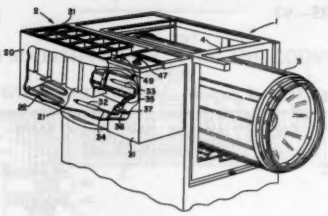
3,581,057
HOT WATER HEATER
Theodore F. Meyers, Medina, Ohio, assignor to The Hobart Manufacturing Company, Troy, Ohio
Filed Oct. 8, 1969, Ser. No. 864,766
Int. Cl. H05b *1/00*
U.S. Cl. 219—312 **17 Claims**



Air is introduced and retained within a nonpressurized hot water heater tank when water is supplied to the tank and is slowly exhausted after the water supply is shut off to provide space within the tank for expansion of the water when

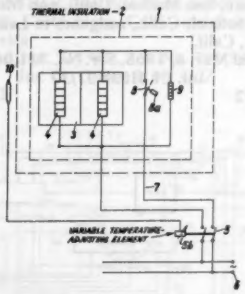
heated. In the embodiment shown, air is aspirated into the water supply and is accumulated within an inverted cup located within the tank. When the water supply stops, air escapes from the cup thereby providing a space within the tank into which the water can expand.

3,581,058
APPARATUS FOR PROCESSING PHOTOGRAPHIC MATERIALS
Paul Romano, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 18, 1968, Ser. No. 698,832
Int. Cl. F24h *1/00*
U.S. Cl. 219—330 **6 Claims**



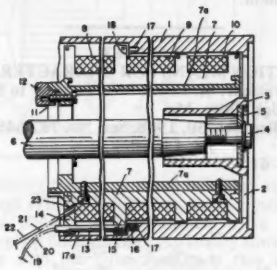
An apparatus for processing photographic liquid including a processing drum which utilizes and discharges successively received unit charges of photographic processing liquid, a container for storing a unit charge of the liquid to be received by the drum, a heating element for heating the container and a fluid pressure temperature sensor in thermal communication with the heating element and the drum for regulating the temperature of the liquid in the container in inverse proportion to the ambient temperature surrounding the drum.

3,581,059
APPARATUS FOR HEATING A STORAGE CORE OF A HEAT STORING FURNACE
Richard Breitmeyer, Winnenden, and Karl Amann, Schmiden, Germany, assignors to Bauknechte GEA Electrotechnische Fabriken Gesellschaft mit beschrankter Haftung, Stuttgart, Germany
Filed Sept. 15, 1966, Ser. No. 579,541
Claims priority, application Germany, Sept. 17, 1965, B83772
Int. Cl. F25h *7/00*; H05b *1/02*
U.S. Cl. 219—378 **4 Claims**



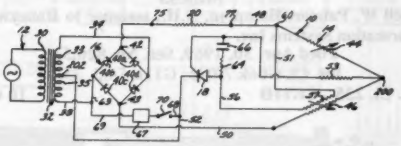
A heat storage furnace is provided with a storage core enclosed in a thermally insulated housing. Electric heating elements are provided for heating the core. A main thermal switch responsive to temperatures exteriorly of the housing deenergizes the core heating elements when a predetermined maximum temperature is exceeded. An additional thermally responsive switch is connected in series with the main thermal switch and is arranged to respond to the temperature in the immediate vicinity of an auxiliary heating element connected so as to be energized through the additional thermal switch. The auxiliary heating element is positioned in the housing and is thermally remote from the main thermal switch. The additional thermal switch cyclically opens and closes the circuit to the core heating elements during the charging period before the temperature at the exterior of the housing exceeds the predetermined maximum and the main thermal switch deenergizes the heating elements to terminate the charging period.

3,581,060
TEMPERATURE CONTROL DEVICE IN A HEATED GALETTE
Karl Bauer, and Herbert Turk, Remscheid-Lennep, Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany
Filed July 12, 1968, Ser. No. 744,550
Claims priority, application Germany, July 14, 1967, Aug. 14, 1967, B93489;B72212
Int. Cl. H05b *1/02*
U.S. Cl. 219—469 **8 Claims**



A rotatable galette for transporting threads, filaments, tapes and the like capable of being controllably heated, preferably by an internally and concentrically mounted stationary induction coil, in which the roller jacket of the galette is an outer cylindrical wall having on its inner surface a radially outwardly recessed portion adapted to receive the terminal heat-sensitive end of an elongated temperature measuring feeler gauge.

3,581,061
TEMPERATURE CONTROL SYSTEM PROVIDING FULL-WAVE CONDUCTION INTO TEMPERATURE CHANGE APPARATUS
William W. Chambers, Anaheim, Calif., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Sept. 5, 1968, Ser. No. 757,695
Int. Cl. H05b *1/02*
U.S. Cl. 219—499 **7 Claims**

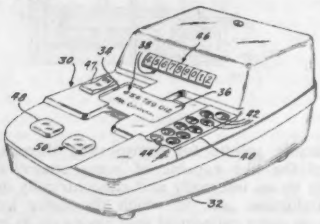


A temperature control system for connection in series with an alternating current source and an environmental change apparatus, the system including a temperature-sensitive bridge circuit which becomes unbalanced in response to environmental temperature change, the unbalance triggering a controlled rectifier which applies power from the source to the environmental change apparatus, a full-wave bridge rectifier of the system applying positive anode voltage to the controlled rectifier during both negative and positive polarity half-cycles of the source voltage.

3,581,062
ELECTRONIC THERMOSTAT
Keith Aston, England, assignor to The Pavelle Corporation, New York, N.Y.
Filed Feb. 18, 1969, Ser. No. 815,511
Claims priority, application Great Britain, Feb. 19, 1968, 8014/68
Int. Cl. H05b 1/02
U.S. Cl. 219—501 3 Claims

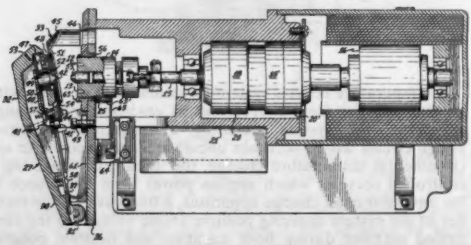
A compact, unitary electronic thermostat is formed by encapsulating a temperature sensing element and a solid-state control circuit in a potting compound having good heat transfer characteristics. The unitary thermostat, which includes a solid-state electronic switch having conductive and nonconductive states which are varied in response to the output from the temperature sensing element to control a load power supply may be completely or partially immersed in a fluid environment.

3,581,063
VERIFICATION MEANS FOR CHARACTER GROUPS
Joseph L. Levasseur, St. Louis, Mo., assignor to Simcom Corporation, High Ridge, Mo.
Filed Dec. 30, 1968, Ser. No. 787,648
Int. Cl. G06k 7/00
U.S. Cl. 235—61.7B 31 Claims



Means for verifying that a character group such as a character group that represents an account number such as might be used on a credit card or like device is or is not known to be objectionable for some reason, including means for comparing a particular character group with a plurality of other similar type character groups and indicating the results of the comparison. The invention also includes novel means for storing and moving character groups and other means for reading and/or sensing the stored character groups during movements thereof.

3,581,064
RECORD SCANNER WITH LOADING AND INDEXING MEANS
Ansell W. Palmer, Hampton, N.H., assignor to Honeywell Information Systems Inc.
Filed Apr. 30, 1969, Ser. No. 820,539
Int. Cl. G06k 7/015; G11b 5/82, 25/04
U.S. Cl. 235—61.11D 10 Claims

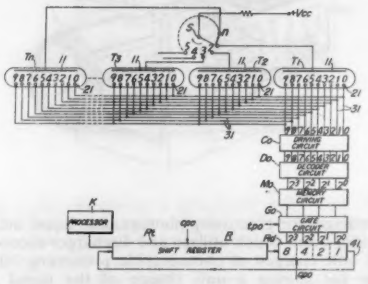


A record scanner is loaded by an operator placing a record on a locating pin while in an open position. Upon closing, the record is transferred to a probe which indexes the record for circular scanning by a rotary transducer.

ERRATUM

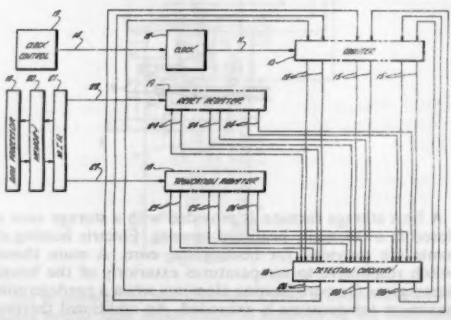
For Class 235—92 see:
Patent No. 3,580,496

3,581,065
ELECTRONIC DISPLAY SYSTEM
Yoshikazu Hatsukano, and Kosei Nomiya, both of Kodaira-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 22, 1967, Ser. No. 685,047
Claims priority, application Japan, Dec. 2, 1966, 41/78,684
Int. Cl. H03k 21/22
U.S. Cl. 235—92 14 Claims



This specification discloses an electronic display system for an information processing apparatus adapted for visual display of information through the use of indicator tubes. In the present system, a shift register and change over switch means for periodically and sequentially distributing the operating potential to the anode of each indicator tube are provided for the purpose of simultaneously and effectively operating the plurality of indicator tubes by means of a single common control device comprising a single driving circuit, decoder circuit and gate circuit connected with the indicator tubes. Thus, an information signal is periodically and sequentially read out by means of the gate circuit, whereby the control device is operated, and the changeover switch means is operated in synchronism with said information signal to cause the indicator tubes to be periodically glow-discharged.

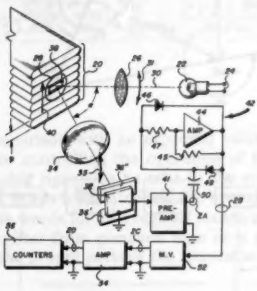
3,581,066
PROGRAMMABLE COUNTING CIRCUIT
Douglas R. Maure, San Marino, Calif., and Mei Goon Wong, Los Angeles, both of, Calif., assignors to Lear Siegler, Inc., Santa Monica, Calif.
Filed Mar. 6, 1968, Ser. No. 711,066
Int. Cl. H03k 21/32
U.S. Cl. 235—92 18 Claims



A programmable counting circuit in which the cycling of a multistage counter is controlled by reset information and

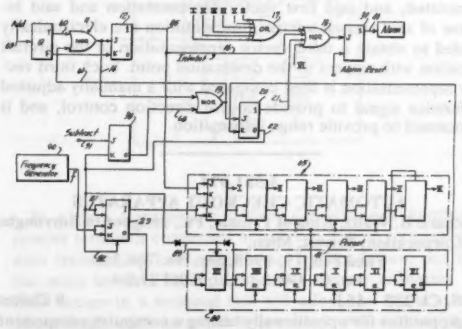
truncation information stored in no more than two registers. A detection circuit generates a "forward carry" signal when the contents of the counter match the contents of a reset register and generates a "reverse carry" signal when the forward carry signal appears in a stage for which a bit is presented in a truncation register. The detection circuit utilizes the "reverse carry" signal to generate reset signals for the counter stage associated with the bit and all prior stages. The detection circuit utilizes subsequent bits in the truncation register to effect the resetting of subsequent groups of stages of the counter whenever the contents of these groups match the corresponding contents of the reset counter. In another embodiment, decoding circuitry utilizes an additional information bit in the reset register to present truncation information sufficient for a single truncation in the absence of a truncation register.

3,581,067
PITCH MATCHING DETECTING AND COUNTING SYSTEM
Samuel P. Willits, and William L. Mohan, both of Barrington, Ill., assignors to Spartanics Limited, Palatine, Ill.
Filed Dec. 2, 1968, Ser. No. 780,367
Int. Cl. G06m 9/00
U.S. Cl. 235—92V **23 Claims**



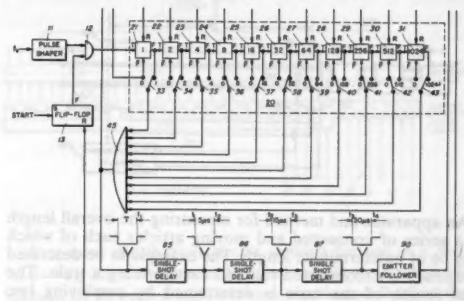
An apparatus for counting stacked sheetlike materials having no sheet separation requirements. The active area of the sensor array is matched to the width of a sheet of the stack and the sensor array caused to traverse the stack, the complex signal output of the sensor array being stripped of the unwanted components in a high gain, diode clamped capacitive input operational amplifier whose square wave output is processed and counted in conventional counting circuits.

3,581,068
COUNTER CONTROLLED DIGITAL LIMIT DETECTOR
Robert D. Wyatt, Costa Mesa, Calif., assignor to the United States of America
Filed Jan. 7, 1969, Ser. No. 791,536
Int. Cl. G06m 3/14, 3/02
U.S. Cl. 235—92 **6 Claims**



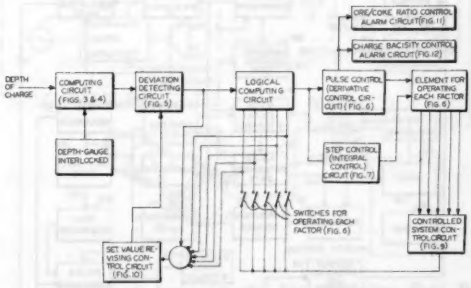
A main counter of "*n*" stages counts in an additive direction and an auxiliary counter of "*n*" stages counts in an additive direction to gate 2^n-1 pulses into the main counter to effect a subtraction in a digital limit detector system. Alarm generating circuitry is activated when the count in the main counter reaches a preset number representing a limit in a monitored device.

3,581,069
FREQUENCY TO BINARY CONVERTER
Arthur M. Pederson, Mercer Island, Wash.
Filed Nov. 14, 1967, Ser. No. 682,841
Assignor to the United States of America as represented by Secretary of the Navy
Int. Cl. H03k 23/00
U.S. Cl. 235—92 **7 Claims**



A sound velocity frequency signal to binary signal conversion and storage system. A high frequency crystal controlled oscillator and counter are controlled by a velocimeter counter to supply a binary number to binary storage flip-flops in accordance with the pulse frequency rate input to the velocimeter counter. The number stored is inversely proportional to the average sound velocity for the period of measurement.

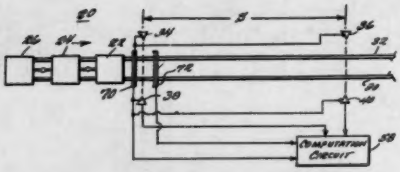
3,581,070
APPARATUS FOR OPERATING A SHAFT FURNACE BY DETECTING THE FALLING SPEED OF THE CHARGE
Keiji Tsujihata; Masatoshi Shimada; Hiromi Asai; Yasuhiro Sawada, and Zensaku Ayuha, all of, Japan, assignors to Nippon Steel Corporation
Continuation of application Ser. No. 348,631, Mar. 2, 1964, now abandoned. This application Nov. 1, 1968, Ser. No. 774,581
Int. Cl. G06f 15/46
U.S. Cl. 235—151.1 **2 Claims**


ORE/COKE RATIO CONTROL ALARM CIRCUIT(FIG.11)
CHARGE BACISITY CONTROL ALARM CIRCUIT(FIG.12)
DEPTH OF CHARGE
COMPUTING CIRCUIT (FIGS. 3 & 4)
DEVIATION DETECTING CIRCUIT (FIG. 5)
LOGICAL COMPUTING CIRCUIT
PULSE CONTROL (DERIVATIVE CONTROL CIRCUIT) (FIG. 6)
ELEMENT FOR OPERATING EACH FACTOR (FIG. 5)
DEPTH GAUGE INTERLOCKED
STEP CONTROL (INTEGRAL CONTROL) CIRCUIT (FIG. 7)
SWITCHES FOR OPERATING EACH FACTOR (Fig. 6)
SET VALUE REVISING CONTROL CIRCUIT (FIG. 10)
CONTROLLED SYSTEM CONTROL CIRCUIT (FIG. 8)

This invention relates to a method and apparatus for always maintaining optimum operating conditions of a blast furnace by measuring the sinking speed of the charge and detecting deviations thereof from a predetermined sinking speed obtained statistically, superposing signals of logical operation obtained by the analysis of various factors representing operating conditions of the furnace on the signal representing the said deviation, and subjecting the blast con-

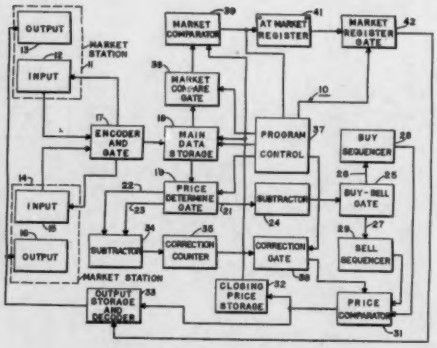
ditions such as temperature and humidity of blast, amount of fuel and amount of blast to a pulse control and or stepped control according to the result of the superposition.

3,581,071
TRAIN LENGTH MEASURING DEVICE
Lawrence A. Payseure, Baltimore, Md., assignor to The Chesapeake and Ohio Railway Company, Cleveland, Ohio and The Baltimore and Ohio Railroad Company, Baltimore, Md.
Filed Apr. 10, 1969, Ser. No. 815,075
Int. Cl. G01b 7/04
U.S. Cl. 235—151.32 **14 Claims**



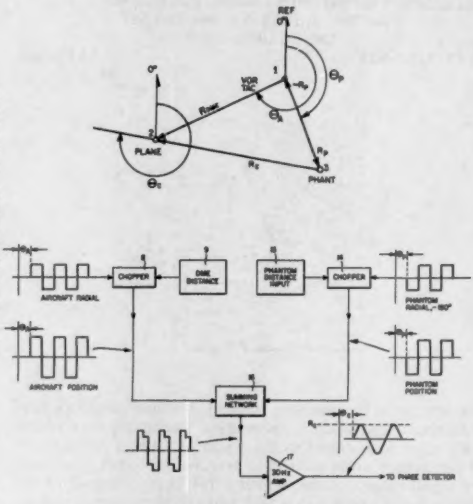
An apparatus and method for measuring the overall length of a series of connected and moving articles each of which may be of indeterminate length. The example to be described comprises interconnected railroad cars forming a train. The total length of the train is determined by employing two separated photocells and two light sources, each source normally shining on a respective photocell, so that each car of the moving train sequentially breaks the lightbeams to the photocells causing the photocells to produce electrical outputs. Since the distance between the two photocells is known and the time which each car takes to travel from one to the other is easily determined from the occurrences of output signals from the photocells, the distance from the beginning of one car to the beginning of the next is computed, the computations being accumulated to indicate the total train length.

3,581,072
AUCTION MARKET COMPUTATION SYSTEM
Frederick Nymeyer, 366 E. 166th St., Holland, Ill.
Continuation-in-part of application Ser. No. 317,026, Oct. 17, 1963, now abandoned. This application Mar. 28, 1968, Ser. No. 723,644
Int. Cl. G06f 7/38
U.S. Cl. 235—152 **23 Claims**



A special purpose digital computer matches orders and establishes market prices in an auction market for fungible goods. Priced orders to buy are arranged in descending order by price and priced orders to sell are arranged in ascending order by price within each price range, all orders are arranged in descending order by time of placement so that the older orders are uppermost. All compatibly priced orders are then matched starting with the highest priced order to buy and the lowest priced order to sell and proceeding sequentially until all compatibly priced pairs of orders have been matched. The prices accompanying the last pair of orders to be matched are then used to establish a trading price for all of the matched pairs and a new market price for future transactions. Unpriced or "at market" orders are assigned prices based upon the market price, unless the market price is substantially below the prices of all priced buy orders or substantially above the price of all priced sell orders, in which case the unpriced orders are not assigned prices until a new market price has been established.

3,581,073
ELECTRONIC COURSE LINE COMPUTER
Wilbur A. Visher, Ambler, Pa., assignor to Narco Scientific Industries, Inc., Fort Washington, Pa.
Filed Feb. 17, 1969, Ser. No. 799,743
Int. Cl. G06g 7/22, 7/78; G01s 7/46
U.S. Cl. 235—150.26 **12 Claims**

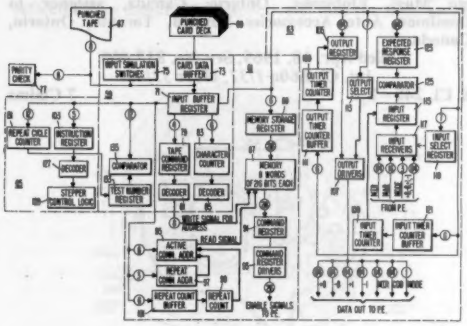


A method of electronically computing navigational course lines and apparatus for carrying out said method is disclosed, whereby a first vector representation of the aircraft location with respect to a VORTAC station is electronically generated by using the VOR signal to control a chopper circuit which acts on the DME distance voltage; a second vector representation of the location of the destination point with respect to the VORTAC is electronically generated in a similar manner, the bearing and distance information being introduced manually by the pilot; the inverse of said second vector is generated; and said first vector representation and said inverse of said second vector representation are electronically added to obtain a third vector representation of the aircraft location with respect to the destination point. Such third vector representation is then compared with a manually adjusted reference signal to provide course direction control, and is processed to provide range information.

3,581,074
AUTOMATIC CHECKOUT APPARATUS
Richard B. Waltz, King of Prussia, Pa., assignor to Burroughs Corporation, Detroit, Mich.
Filed Feb. 19, 1968, Ser. No. 706,268
Int. Cl. G01f 31/30; G06f 11/04
U.S. Cl. 235—153 **9 Claims**

Apparatus for operationally testing a computer component (i.e. a subsystem of a data processing system) which apparatus includes a memory for storing sets of enable signals

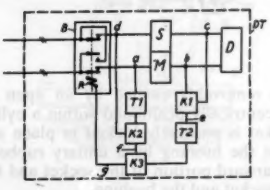
to be transmitted to the computer component under test, and means for transmitting the enable signals to the computer component for causing it to perform operations on data. Also included are register means for storing a data word for transmission to a selectable portion of the computer component at a selectable time during a test, register means for receiving a data word from a selectable portion of the computer component for comparison with an expected value and stepper control logic for controlling the operation of the apparatus. The sets of enable signals to be sent to the computer component, control words for controlling the operation of the apparatus and data words for said register means are fed into an input buffer register from punched tape or a card deck for distribution to the proper parts of the apparatus.



3,581,075
ARRANGEMENT FOR DISCONNECTING A DEFECTIVE LOCAL CONCENTRATOR IN A DATA TRANSMISSION SYSTEM

Orjan Mats Mattsson, Taby, and Walter Herbert Ewin Widl, Bandhagen, both of, Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Mar. 25, 1969, Ser. No. 810,321
Claims priority, application Sweden, Apr. 18, 1968, 5174/1968
Int. Cl. G08c *25/00*; G06f *11/00*
U.S. Cl. 235—153 1 Claim

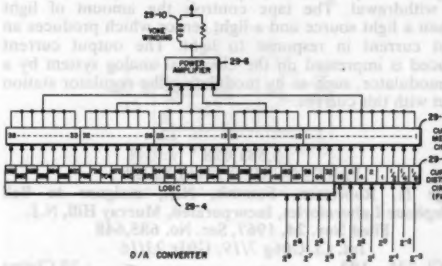


In a data transmission system comprising a number of remote terminals connected in series to a main terminal via a data transferring line inquiries are cyclically sent out from the main terminal to the respective remote terminals. If a fault occurs in a terminal this will affect the whole system. Accordingly each terminal is provided with a shunting arrangement which disconnects a faulty terminal without affecting the rest of the system.

3,581,076
DIGITAL TO ANALOG CURRENT DISTRIBUTION CIRCUIT

Mauritz L. Granberg, Minneapolis, and Hubert W. Mueller, Jr., Hamburg, both of, Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Division of Ser. No. 569,481, Aug. 1, 1966, Pat. No. 3,510,634, May 5, 1970. This application July 17, 1969, Ser. No. 871,162
Int. Cl. H03k *13/04*
U.S. Cl. 235—154 1 Claim

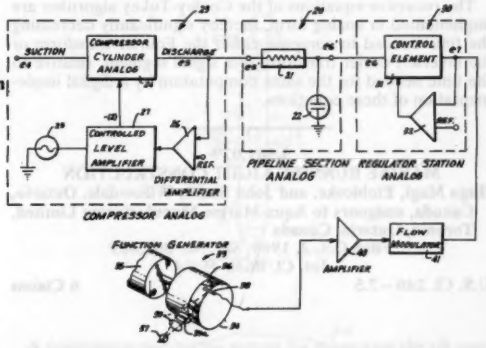


A current distribution circuit suitable for use in a digital-to-analog converter in which digital signals are applied either directly or through a logic network to selected flip-flop stages such that the flip-flops produce a number of output signals which individually represent a given increment of current. These current increments are made available to a resistive ladder type current metering circuit to produce the desired analog voltage.

3,581,077
ELECTRICAL ANALOG MODEL FOR FLUID FLOW TRANSMISSION SYSTEM

Glenn Damewood; Cecil R. Sparks, and James D. King, all of San Antonio, Tex., assignors to Southern Gas Association, San Antonio, Tex.

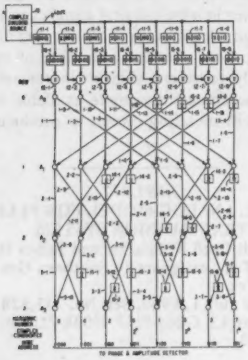
Filed July 1, 1968, Ser. No. 741,528
Int. Cl. G06g *7/57*; H03h *7/36*
U.S. Cl. 235—184 18 Claims



An electrical analog model for simulating fluid flow characteristics in a pipeline flow system, such as a gas transmission system, wherein the analog includes a source of electrical voltage proportional to inlet fluid pressure, a compressor station analog, a plurality of pipeline section analogs, a regulator station analog, and a flow transient or load utilization simulator. The compressor station analog includes a capacitor pump, a source of alternating current for driving the capacitor pump, a controlled-level amplifier for controlling the drive to the capacitor pump, and a differential

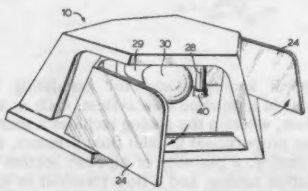
amplifier responding to changes in the output of the capacitor pump and driving the controlled level amplifier. Each line section analog is a delay line including a nonlinear resistance element, such as a field effect transistor having a resistance proportional to the current passing through it, and a nonlinear voltage variable capacitance diode having a capacitance proportional to the inverse square root of impressed voltage. The regulator analog is a voltage regulator including a control element, such as a field effect transistor, and a differential amplifier responding to changes in regulator analog output voltage to drive the field effect transistor. The transient and load utilization simulator includes a function generator programmed by an opaque tape to simulate fluid withdrawal. The tape controls the amount of light between a light source and a light sensor which produces an output current in response to light. The output current produced is impressed on the electrical analog system by a flow modulator, such as by modulating the regulator station output with this current.

3,581,078
FAST FOURIER ANALYZER
George H. Robertson, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Nov. 24, 1967, Ser. No. 685,648
Int. Cl. G06g *7/19*; G01r *23/16*
U.S. Cl. 235—193 **10 Claims**



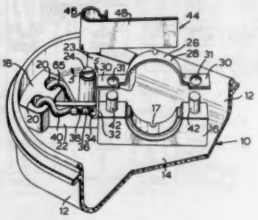
The recursive equations of the Cooley-Tukey algorithm are implemented in analog form, thereby significantly decreasing the time needed to compute either the Fourier transform or the inverse Fourier transform of a signal segment, relative to the time needed for the same computation by a digital implementation of these equations.

3,581,079
MARINE RUNNING LIGHT CONSTRUCTION
Hugo Magi, Etobicoke, and John Smith, Willowdale, Ontario, Canada, assignors to Aqua-Marine Manufacturing Limited, Toronto, Ontario, Canada
Filed Oct. 2, 1969, Ser. No. 863,089
Int. Cl. B63b *45/04*
U.S. Cl. 240—7.5 **6 Claims**



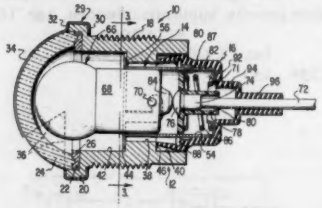
The combination of a lamp housing and a pivotally mounted lens, the latter being adapted to swing between an open and a closed position. The lens has a resilient arm extending outwardly from the lens away from the pivot axis, with a bearing edge adapted to sweep through an arc adjacent an inner face of the housing. The face has a cam surface following the arc, such that the bearing arc is biased toward one end or the other of the cam surface, corresponding to the open and closed positions of the lens.

3,581,080
LAMP HOUSING AND ELECTRIC TERMINAL CONSTRUCTION
Hugo Magi, Etobicoke, Ontario, Canada, assignor to Dominion Auto Accessories Limited, Toronto, Ontario, Canada
Filed Apr. 18, 1969, Ser. No. 817,400
Int. Cl. B60q *1/32*; H01r *33/48*
U.S. Cl. 240—8.2 **7 Claims**



A lamp housing in which a crook-shaped terminal is looped around a split pin through which the bared end of an electric wire is inserted, so that the terminal contacts the bared end. One projecting part of the terminal is biased toward the center contact of an electric bulb by reason of another projecting part thereof bearing against a portion of the housing.

3,581,081
AUTOMOTIVE LICENSE LAMP ASSEMBLY
Lawrence E. Rieth, Springfield, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.
Filed Aug. 11, 1969, Ser. No. 849,079
Int. Cl. B60q *1/30*
U.S. Cl. 240—8.3 **10 Claims**

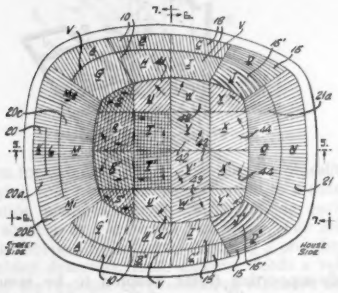


A lamp is removably carried by an open J-slot socket which is concentrically positioned within a cylindrical bushing. The socket is positively locked in place and resiliently sealed against the bushing by a unitary rubber boot which covers the rearward portion of the socket and is compressed between the socket and the bushing.

3,581,082
STREET LIGHTING LUMINAIRE REFRACTOR
Jan Shadwick, Newark, Ohio, assignor to Holophane Company, Inc., New York, N.Y.
Filed Aug. 9, 1968, Ser. No. 751,468
Int. Cl. F21v *5/00*
U.S. Cl. 240—106 **14 Claims**

In a tilted oval street luminaire, a refractor for use with a physically oval, but optically round, reflector provides four

substantially uniform light beams for intersection lighting. Vertical prisms in the forward beam sections of the refractor and vertical and horizontal prisms in the rear beam sections of the refractor provide the basic four way distribution from a tilted reflected beam which, because of reflector design considerations may be horseshoe-shaped or annular. Some or all of the vertical prisms may have their normally inactive or intermediate surface oriented to receive light to balance the candlepower as between the front and rear beams and horizontal prisms acting in conjunction with the vertical prisms lower the reflected and lateral refracted beams. Front and rear radial prisms redirect incident direct light and reflected plus direct light respectively, into the front and rear



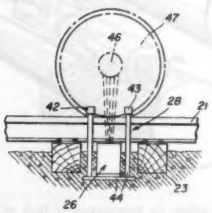
streets, the latter radial prisms building the below beam component in the rear streets. The bottom of the refractor provides four basic sections of variously oriented prisms on the incident surface, further subdivided into four further sections each to split the direct and reflected light from underneath the unit and uniformly distribute it over the entire intersection. Longitudinal flutes centrally located on the outer surface below the inside bottom sections, and a checkerboard pattern of crossing flutes on the lower portion of street side outer surface coact with the inside prisms to break up the strong component of reflected light while paying due respect to the direct light to confine the down light within the intersection.

3,581,083

WHEEL TRIP

Ivan L. Joy, 1616 W. 29th St., Topeka, Kans.

Division of Ser. No. 665,329, Sept. 5, 1967, Pat. No. 3,461,284.
This application Aug. 11, 1969, Ser. No. 848,922
Int. Cl. B61l *1/10*
U.S. Cl. 246—246 **6 Claims**



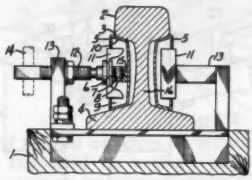
This disclosure deals with a wheel trip adapted to be mounted adjacent a length of railroad track and to indicate the presence or the passing of the wheels on one side of a train. The wheel trip includes two spaced sensors, means for energizing the two sensors, each of the sensors responding to the presence of a wheel, and means connected in circuit with the sensors for generating a trip signal only when a wheel is adjacent both sensors. A counter and/or a temperature measuring unit may be connected to respond to the trip signal.

3,581,084

PIEZOELECTRIC WHEEL-AXLE DETECTOR

Saburo Kaneno, Terahata, Kawanishi; Takeshi Yamaguchi, Suita, Osaka, and Shunichi Yoshioka, Takarazuka, all of, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 6, 1968, Ser. No. 773,765
Claims priority, application Japan, Nov. 10, 1967, 42/71965
Int. Cl. B61l *13/04*
U.S. Cl. 246—249 **13 Claims**



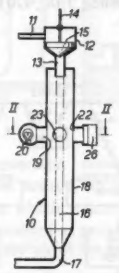
A wheel-axle detector for wheeled vehicles following a track having rails with an I-shaped cross section forming a continuous imperforate web with an opposed overhanging head and foot. A piezoelectric element holder containing a piezoelectric element is inserted directly between the head and the foot of the rail such that a portion of the vehicle wheel load borne on the rail is imparted to the element. A detecting circuit is provided to receive and detect the electrical output of the piezoelectric element.

3,581,085

ULTRAVIOLET FLUORESCENT ANALYZER FOR MONITORING OF OIL IN DISCHARGE BALLAST

Sonja I. Barrett, Middle Farm, Watereaton, Oxford, Oxfordshire, England

Filed May 20, 1968, Ser. No. 730,253
Claims priority, application Great Britain, May 26, 1967, 24592/67
Int. Cl. G01n *21/26*
U.S. Cl. 250—43.5 **16 Claims**



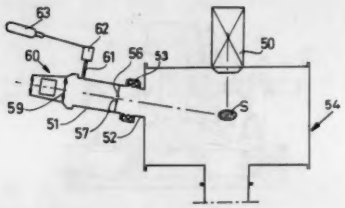
A continuous monitoring system for measuring the oil content of discharged ballast water based on the use of an ultraviolet fluorescence meter. The meter operates by passing ultraviolet light through a sample jet of water, the fluorescent visible light being measured by a filter-photocell combination angled to the incident beam. At elevated oil concentrations, the meter response diminishes as both ultraviolet and visible light are cut off by the increasing amounts of dark oil present, thus giving a false reading. A photocell or fluorescent indicator screen is therefore proposed as a warning device to be used in conjunction with the above monitoring system, to indicate when the emerging ultraviolet light is obscured by excess quantities of oil.

3,581,086

DEVICE FOR THE SUPERVISION OF A TREATMENT IN AN ENCLOSURE AT VERY LOW PRESSURE

Bernard M. Daigne, Malakoff, and Louis Pelletier, Sainte-Genevieve Des Bois, France, assignors to Office National D'Etudes Et De Recherches Aerospatiales (par abreviation O.N.E.R.A.)

Filed Mar. 18, 1968, Ser. No. 713,921
Claims priority, application France, Mar. 21, 1967, 99648
Int. Cl. G01n *23/22*
U.S. Cl. 250—49.5 13 Claims



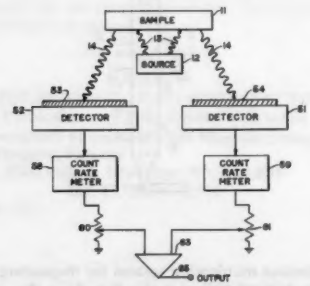
A device for supervising a thermal treatment operation taking place inside a vacuum enclosure by detecting and/or measuring emitted radiation accompanying the operation comprises a compartment maintained at a higher pressure substantially closed at one end by a partition located inside the enclosure and having an opening for passing radiation from the enclosure to a radiation sensitive element closing the compartment at its other end, the size of the opening and the distance between the partition and the radiation sensitive element being such that, for the value of the pressure in the compartment, substantially no vapor molecules originating from the enclosure during the operation reach the sensitive element. The operation may for example comprise an electron gun bombarding a weld region within the enclosure.

3,581,087

X-RAY FLUORESCENCE MEASURING SYSTEM EMPLOYING BALANCED X-RAY FILTERS AND CIRCUIT MEANS TO VARY THE EFFECTIVE RELATIVE TRANSMISSION THEREOF

Joris M. Brinkerhoff, Arlington; Jean Hunerwadel, Hingham, and Francis B. Sellers, Sudbury, all of, Mass., assignors to Panametrics, Inc., Waltham, Mass.

Filed Oct. 25, 1968, Ser. No. 770,615
Int. Cl. H05g *3/00;* G01m *23/22*
U.S. Cl. 250—51.5 4 Claims



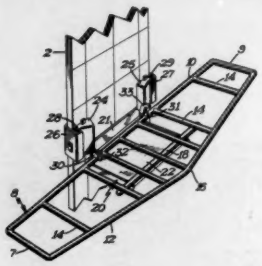
An X-ray fluorescence analysis system for measuring the amount of a specific element in a matrix containing variable amounts of other elements. The system employs a pair of balanced filters and a detector and counting apparatus. One filter has an absorption edge above the characteristic X-ray energy of the specific element and the other has its absorption edge below that energy. The apparatus is arranged so that with one filter in place the number of rays received by the detector for a time τ is accumulated and with the other filter in place the number of rays detected for a fraction $F\tau$ of that time is subtracted from the first number, the difference representing the quantity of specific element present.

3,581,088

X-RAY TABLE ATTACHMENT

Edward P. Engels, Weiner Memorial Hospital, Marshall, Minn.

Filed Aug. 15, 1968, Ser. No. 752,962
Int. Cl. G01n *23/04*
U.S. Cl. 250—55 3 Claims



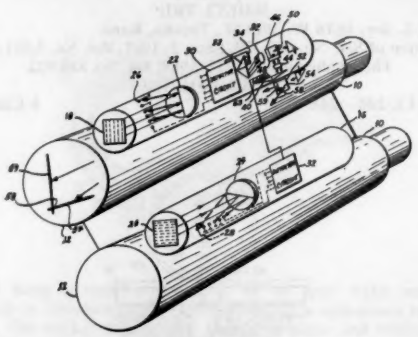
A body-supporting frame adapted to be removably attached to a vertically oriented X-ray table in a horizontal position for the purpose of obtaining horizontal beam decubitus X-ray films of a patient's chest, abdomen, or extremities. Special bracket detents secured to the footrest of a standard, upright X-ray table may be utilized to slidably and removably support the aforesaid body rest frame on said footrest.

3,581,089

CATADIOPTRIC REFLEX RADIATION DETECTION CONVERSION, LOCATION AND DISPLAY DEVICE

Leonard J. Craig, Carpinteria, Calif., assignor to The United States of America as represented by the Secretary of Air Force

Filed June 25, 1969, Ser. No. 836,395
Int. Cl. G01t *1/00*
U.S. Cl. 250—83R 4 Claims



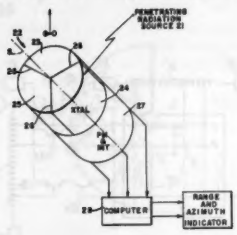
A system for detecting and locating short duration radiant energy pulses occurring in the nonvisible portions of the spectrum by converting each event of pulsed energy within a region of an observer's field of view to a visible pair of distinctive orthogonal lines intersecting over the source of radiation including a pair of apertures, toric reflectors with mutually orthogonal principal axes reflecting the incident radiation on a pair of linear arrays of photosensitive detectors, and detector circuits for illuminating corresponding optoelectric members and an optical system for projecting the visible light before an observer's eyes.

3,581,090

UTILIZING PENETRATING RADIATION

Leonard Carlton Brown, Columbus, Ohio

Filed Oct. 20, 1966, Ser. No. 588,199
Int. Cl. G01t 1/20; G01s 5/16
U.S. Cl. 250—83.3 16 Claims



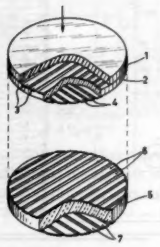
A system for determining the position of a plurality of objects carrying sources of radiation relative to a detector for said radiation includes means for modulating each of the radiation sources at a different frequency. The modulated radiation is received by an array including a plurality of mutually shielded detectors. Each detector feeds a voltage indicative of the amount of penetrating radiation impinging thereon to a computing network which derives visual signals indicative of the angular location and range of each object carrying a radiation source. Provision is made for eliminating background radiation from the signal derived from each of the detectors.

3,581,091

NEUTRON SPECTROMETER EMPLOYING TWO SEMICONDUCTOR COUNTERS IN COMBINATION WITH A COINCIDENCE CIRCUIT FOR ELIMINATING BACKGROUND

Albertus Cornelis Meijer, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 3, 1968, Ser. No. 756,751
Claims priority, application Netherlands, Sept. 15, 1968, 6712684
Int. Cl. G01t 3/00
U.S. Cl. 250—83.1 2 Claims



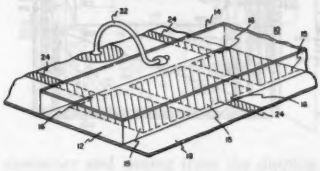
A hydrogen rich foil is arranged at right angles to a beam of neutrons to be measured and emits protons which are interrupted and counted by a semiconductor barrier layer transmission counter (dE/dx—counter) and a semiconductor absorption or output counter (E—counter which count the protons and measure the energy, background being eliminated by a coincidence counter. Both the transmission counter and absorption counter consists of a checkerboard counter and the scattering foil is arranged substantially immediately against the transmission counter, the scattered protons being measured by means of the coincidence circuit not only according to their number and energy, but also according to their direction.

3,581,092

PYROELECTRIC DETECTOR ARRAY

Denton Pearsall, Stamford, Conn., and Gerald Jankowitz, Hillsdale, N.J., assignors to Barnes Engineering Company, Stamford, Conn.

Filed Apr. 9, 1969, Ser. No. 814,761
Int. Cl. G01t 1/16
U.S. Cl. 250—83.3 5 Claims



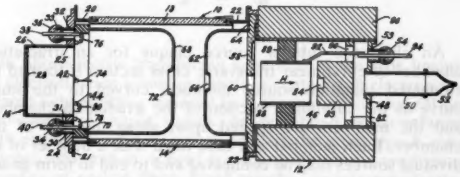
An array of thermal detectors for infrared radiation measurement is fabricated on a single piece of pyroelectric material. A common transparent electrode to the infrared radiation is applied thereto and positioned on one side of the layer of pyroelectric material facing the incident radiation, and a plurality of individual field-defining electrodes are mounted on the other side of the pyroelectric material. This structure is simpler and more reliable than an assembly of isolated detectors and is easier to fabricate by using vacuum-deposited leads on the mounting substrate.

3,581,093

DC OPERATED POSITIVE ION ACCELERATOR AND NEUTRON GENERATOR HAVING AN EXTERNALLY AVAILABLE GROUND POTENTIAL TARGET

Barney J. Carr, deceased, late of Colorado Springs, Colo. (by Elisabeth Helen Carr, administratrix), assignor to Kaman Sciences Corporation, Colorado Springs, Colo.

Continuation-in-part of application Ser. No. 363,064, Apr. 23, 1964, now Patent No. 3,393,316, dated July 16, 1968.
This application Apr. 23, 1968, Ser. No. 723,632
Int. Cl. G21g 3/00; G21h
U.S. Cl. 250—84.5 12 Claims



Sealed neutron generator containing an isotope of hydrogen having an ion source, an accelerator and a target containing a substance which reacts with impinging ions to produce neutrons maintained at ground potential and located to be available at the exterior of the generator.

3,581,094

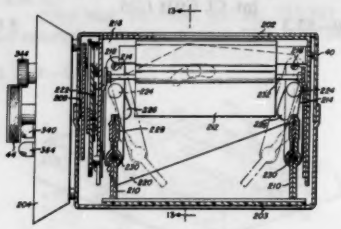
X-RAY APPARATUS

Leonard F. Peyser, Briarcliff Manor, N.Y., and Gordon F. Baror, Norwalk, Conn., assignors to The Machlett Laboratories, Incorporated, Springdale, Conn.

Filed Nov. 7, 1968, Ser. No. 774,106
Int. Cl. G03b 41/16
U.S. Cl. 250—105 10 Claims

X-ray apparatus for preventing overexposure of a subject to X-radiation by limiting the size of the irradiated area to conform substantially to the size of any one of a number of predetermined selected film sizes. This is achieved by an electrical system for compiling and integrating information indicative of the longitudinal and lateral dimensions of the

film area, the distance between the film and the X-ray tube, and the size of the cone of radiation as established by adjusted collimation of the X-ray beam. The electrical system functions to effectively permit operation of the X-ray tube



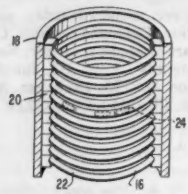
when integrated information indicates that the various components of the apparatus are properly adjusted so that the size of the cone of radiation and, consequently, of the irradiated area conforms substantially to the size of a film being used.

3,581,095

SOURCE PLAQUE FOR AN IRRADIATION CHAMBER OF CURVILINEAR CROSS SECTION

Jackson A. Ransohoff, Bethesda, and James J. Hairston, Jr., Rockville, Md., assignors to Neutron Products, Inc., Washington, D.C.

Filed July 17, 1967, Ser. No. 653,899
Int. Cl. G21h *5/00*
U.S. Cl. 250—106 **2 Claims**



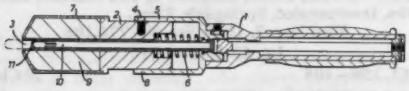
An elongated tubular source plaque for an irradiation chamber of curvilinear transverse cross section is formed by elongated radiation source members curved to the same curve as the curvilinear section of the irradiation chamber, and the members are spaced apart along the axis of the chamber. Each member is a tube filled with a number of individual sources may be connected end to end to form an annulus, or formed as a helix to provide the tubular source plaque. The members may be of uniform or nonuniform dosage and the spacing of the members may be regular or irregular, and may further be adjustable.

3,581,096

DEVICE FOR CONTROLLING EXPOSURE FROM A RADIOACTIVE SOURCE

George A. Seward, 12 Flaunden Lane, Bovingdon, England

Filed Sept. 3, 1968, Ser. No. 756,970
Int. Cl. G21f *5/02*
U.S. Cl. 250—106 **9 Claims**



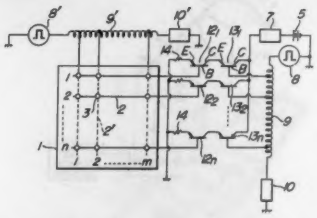
A device is disclosed for controlling the exposure from a radioactive source by removably positioning a radiating pellet within a bore in a shielding material in a handle-operated telescoping torch arrangement which can be stored in disassembled form in a protective container.

3,581,097

SOLID-STATE IMAGE PICKUP DEVICE

Masao Hibi, and Takeshi Nishimura, Kodaira-Shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 13, 1967, Ser. No. 622,773
Claims priority, application Japan, Mar. 16, 1966, 41/15,762
Int. Cl. H01j *39/12;* **H04n** *3/14*
U.S. Cl. 250—209 **7 Claims**



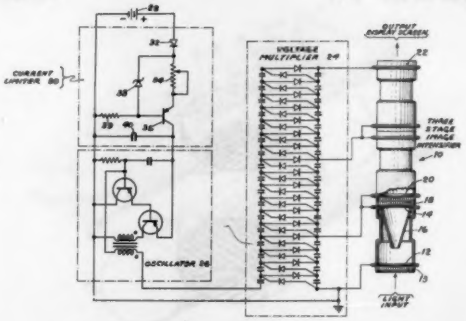
The solid-state image pickup device is equipped with a radiation-sensitive surface formed with a plurality of radiation-sensitive elements disposed in a matrix form, two groups of conductive strips for impressing scanning pulses to said radiation-sensitive elements, first scanning-pulse-distributing means connected to one of said two groups of conductive strips, second scanning-pulse-distributing means connected, via transistors having switching action, to the other of said two groups, and a detector for deriving, as electric signals, the changes in the characteristics of said radiation-sensitive elements.

3,581,098

AUTOMATIC BRIGHTNESS CONTROL

Alan W. Hoover, Hollins, Va., assignor to International Telephone and Telegraph Corporation, Nutley, N.Y.

Filed Feb. 24, 1969, Ser. No. 801,633
Int. Cl. H01j *31/50*
U.S. Cl. 250—213 **7 Claims**



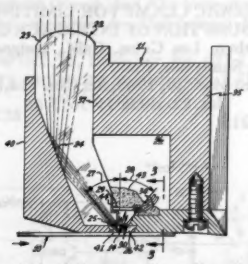
The brightness of a phosphor display screen of an image intensifier tube is automatically controlled by a current-limiting device connected between a direct current source and an oscillator which supplies an alternating voltage to a voltage multiplier, the latter in turn applying a direct accelerating voltage between the input photocathode and output display screen of the tube. The current-limiting device acts to provide a relatively constant current when the input light intensity and corresponding output current of the display screen increase to a predetermined level.

3,581,099
TORIC IMAGING LENS FOR SLOT CENSORS FOR SATELLITES
Georg G. F. Franke, Wetzlar, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany
Filed Mar. 7, 1968, Ser. No. 711,314
Claims priority, application Germany, Mar. 10, 1967, L55,966;IXa/42h
Int. Cl. H01j *3/14, 5/16;* G02b *3/06, 13/01*
U.S. Cl. 250—216 4 Claims

Five embodiments of slot sensors for stabilizing the position of a satellite in space are disclosed. All embodiments comprise a glass body having a refractive circumferential surface of 180° angular aperture. In the image plane of the refractive surface is disposed a slot diaphragm, the slot of which is arranged to coincide with the center plane of said glass body. Behind the slot diaphragm there is provided a photoelectric receiver which is sensitive to the electromagnetic rays which are incident on the sensor.

In the different embodiments the slot diaphragms are shown to be positioned either in front of or behind the center of rotation of the toric glass body (in the direction of light travel) depending on the radius of the toric shape and on the refractive index of the glass.

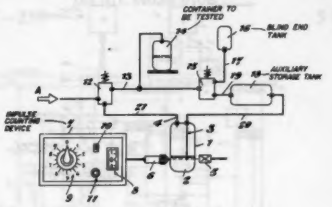
3,581,100
OPTICAL READING DEVICE
Richard E. Milford, Phoenix, Ariz., assignor to Honeywell Information Systems Inc.
Filed Oct. 3, 1968, Ser. No. 764,890
Int. Cl. G08c *9/06*
U.S. Cl. 250—216 4 Claims



An optical read head for record-reading electronic equipment which senses and generates signals in response to marks on documents as the documents are transported along a given path.

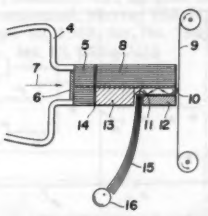
3,581,101
PHOTOELECTRIC BUBBLE METER FOR CHECKING GASTIGHT CONTAINERS AND THE LIKE
Teodorico Neeff, 38 Via Gran Sasso 20141, Milan, Italy
Filed July 1, 1969, Ser. No. 838,208
Claims priority, application Italy, July 13, 1968, 18930A/68
Int. Cl. G01h *21/26*
U.S. Cl. 250—218 2 Claims

The disclosure relates to a device for checking the gastightness of containers and the like. The device essentially comprises: a transparent jar containing a liquid and provided with an inflow tube dipping in said liquid and an outflow tube terminating above the surface of the liquid, said inflow tube being directly or intermediately with the container to be tested; a projector outside the transparent jar adapted to transmit a horizontal beam towards the end of the dipping tube; a photocell diametrically opposed to the projector and adapted to reveal the eventual bubbles originated by leaks in



the tested container and issuing from the dipping tube; and an impulse counting device adapted to count the bubbles revealed by the photocell.

3,581,102
PHOTOELECTRIC AND ELECTRIC LIGHT CONVERSION ELEMENT
Kazuyoshi Nagao, Kanagawa-ken, Japan, assignor to Canon Camera Co., Ltd., Tokyo, Japan
Filed Dec. 26, 1968, Ser. No. 787,058
Claims priority, application Japan, Jan. 8, 1968, Jan. 8, 1968, 43/23811;43/985
Int. Cl. G02b *5/16*
U.S. Cl. 250—227 10 Claims

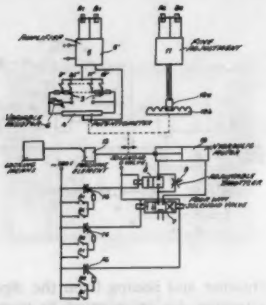


In photoelectric transducing apparatus of the type having an electron beam scanning a surface coated with electron activated light emitting material to convert graphic information into electrical output signals, or modulated in accordance with electrical input signals to convert the input signals into graphic information, a light transmitting means comprises a plurality of optical fibers fused together in juxtaposed relation to form a plate having a solid, voidless cross section of the optical fibers. The light transmitting means may comprise a plate severed from the fused fibers and fritted to the surface of a cathode-ray tube, in combination with a light transmitting channel formed of the fused optical fibers. The end faces of the channel may be formed either by cutting perpendicular to the lengths of the fibers or by cutting at an angle to such perpendicular.

3,581,103
ARRANGEMENT FOR THE ADJUSTMENT OF THE POSITION OF MOVABLE MACHINE ELEMENTS
Aarne Olavi Makela, Karhula, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland
Filed Dec. 30, 1968, Ser. No. 787,870
Claims priority, application Finland, Jan. 3, 1968, 13/68
Int. Cl. G05b *13/02;* G01d *5/34*
U.S. Cl. 250—231 4 Claims

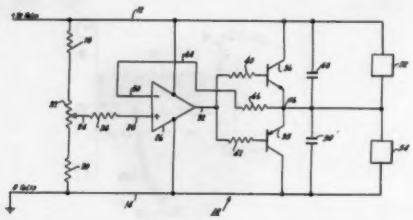
The invention is particularly applicable for the adjustment of an edge trimming saw by remote control, wherein the number of positions into which the machine element is to be adjusted is small. There is described a nonlinear system comprising a coarse adjustment for transferring the element to

the vicinity of the desired point at a high velocity and a fine adjustment to transfer the body at a low velocity toward its



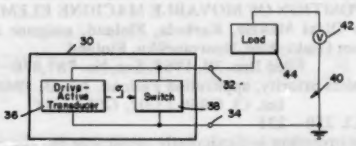
final position. The fine adjustment is effected by a photocell device and a toothed strip of opaque material.

3,581,104
VOLTAGE SPLITTER CIRCUIT
Donald G. Thew, Milwaukee, Wis., assignor to Hornischfeger Corporation, West Milwaukee, Wis.
Filed Mar. 5, 1970, Ser. No. 16,827
Int. Cl. H02j *1/14, 3/46*
U.S. Cl. 307—15 **5 Claims**



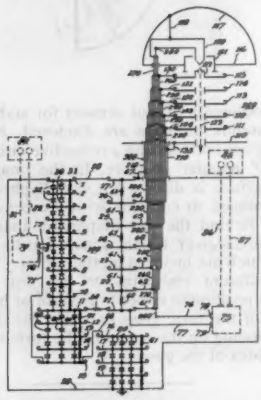
A voltage splitter circuit provides a terminal voltage equal to half the voltage impressed across a pair of voltage busses. The voltage at the intermediate terminal may be used to provide two equal, but opposite, voltages between the intermediate terminal and each of the busses. The intermediate terminal is located between the output circuits of two complementary transistors connected across the busses. The transistors are operated by an amplifier driven by a voltage divider. A feedback circuit exists between the intermediate terminal and the input of the amplifier to stabilize the circuit.

3,581,105
SWITCHING APPARATUS
David B. Gish, Pasadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Filed Sept. 23, 1968, Ser. No. 761,698
Int. Cl. H01h *35/00*
U.S. Cl. 307—116 **13 Claims**



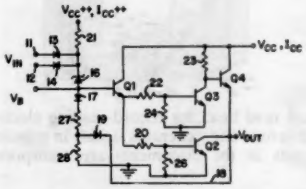
A two-terminal switching apparatus which includes a transducer requiring drive energization for producing a sensing capability. The transducer and a switch are parallel connected across the terminals, and one of the terminals is connectable to a source of electrical energy through an external load, while the other terminal is connectable to common. A preset voltage difference appears across the terminals when the switch is conducting, which voltage difference is sufficient to permit transducer drive continuity.

3,581,106
GRADED PLANE, HIGH VOLTAGE DC POWER SUPPLY
Joseph T. Peoples, and Charles C. Landry, Austin, Tex., assignors to Nuclear-Chicago Corp., Des Plaines, Ill.
Filed Apr. 5, 1968, Ser. No. 719,107
Int. Cl. H02j *5/00*
U.S. Cl. 307—150 **7 Claims**



A high voltage electron accelerator system employing a graded plane power supply, a graded plane accelerator, and a single, graded-conductor cable interconnecting the power supply and the accelerator.

3,581,107
DIGITAL LOGIC CLAMP FOR LIMITING POWER CONSUMPTION OF INTERFACE GATE
Einer Dale Nielsen, Los Gatos, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.
Filed Mar. 20, 1968, Ser. No. 714,645
Int. Cl. H03k *19/36, 5/08*
U.S. Cl. 307—215 **3 Claims**

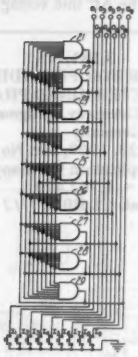


A NAND-type logic gate for interfacing high voltage logic levels with a low level output. Feedback means including a diode are coupled between the base input of an amplifier which is coupled to the input logic terminals and the output. The feedback functions to clamp the input of the amplifier to a relatively low voltage to cause a dropping resistor between the high voltage power supply and the base input of the amplifier to have an increased voltage drop with increased power supply voltage to thus maintain the drive of the amplifier substantially constant. On the other hand, the feedback path is also coupled to ground through an output transistor to thus reflect load current changes to allow the drive voltage to the amplifier to increase in response to increased drive requirements. The diode in the feedback path provides for nonlinearity to thus prevent oscillations.

3,581,108
SINGLE OUTPUT SELECTING CIRCUIT EMPLOYING A PLURALITY OF INTERLOCKED NOR-GATES

Irving V. Eisenmenger, Burlington, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 5, 1968, Ser. No. 781,359
Int. Cl. H03k 19/34
U.S. Cl. 307—215 3 Claims

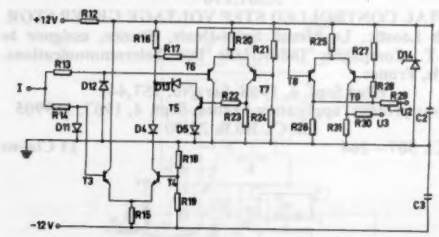


A plurality of NOR gates are arranged with the output of each gate connected to an associated output terminal and to an input of every other gate. Energization of a selected output terminal, inhibits the operation of each gate other than the one associated with the selected output terminal thereby latching the one associated with the selected terminal in an energized condition and the nonselected terminals in a nonenergized condition.

3,581,109
CIRCUIT SYSTEM FOR PRODUCING AN OUTPUT SIGNAL FROM A VARIABLE AMPLITUDE SIGNAL WHEN THE AMPLITUDE OF SAID SIGNAL IS WITHIN A SELECTED RANGE

Tore Bertil Reinhold Olsson, and Ake Valentin Nilsson, Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Oct. 23, 1967, Ser. No. 677,122
Claims priority, application Sweden, Apr. 3, 1967, 4615/67
Int. Cl. H03k 5/20
U.S. Cl. 307—235 12 Claims

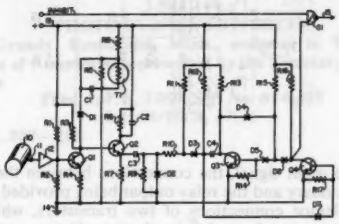


There is disclosed a system for selecting and indicating the amplitude of the electron beam of a cathode-ray tube, and more particularly, a system in which a definite relationship is maintained between the output signal of a heat radiation sensitive detector and the intensity of heat radiations received by the detector. As a result, the amplitude of the output signal of the detector has a definite relationship to the temperature at the point of origin of the heat radiation. The system also includes means for accurately determining the specific area within a larger area from which heat radiation within a specific range of temperature originates.

3,581,110
APPARATUS FOR EVALUATING SIGNALS READ FROM MAGNETIC MEDIUM

Richard J. Belcastro, Addison, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Feb. 17, 1969, Ser. No. 799,704
Int. Cl. H03k 5/08
U.S. Cl. 307—237 5 Claims

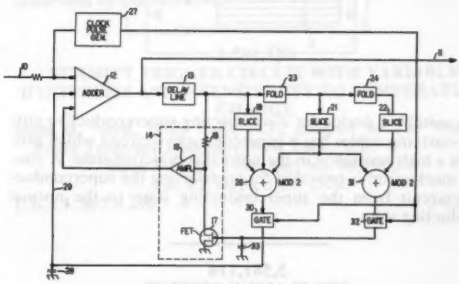


A two-stage transistorized, magnetic drumhead readout amplifier including a positive signal limiter and a negative signal limiter, followed by an excursion detector arranged to pass only that portion of a signal that swings from the positive to the negative direction, and then only of a predetermined magnitude. The passed signal is shaped by a monostable multivibrator prior to application to suitable logic circuitry.

3,581,111
ADAPTIVE INTEGRATOR FOR DIGITAL SIGNALS

Ernest R. Kretzmer, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 16, 1968, Ser. No. 759,848
Int. Cl. G06g 7/18
U.S. Cl. 307—236 4 Claims



An integrator circuit is described in which a received signal is added to a feedback signal. The feedback signal is generated by delaying the sum of the received signal and the feedback signal. The amplitude and DC levels of the feedback signal are controlled by circuits which sense the deviation of the sum signal from predetermined levels.

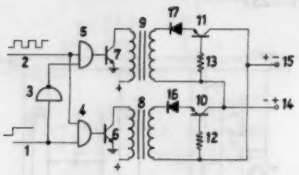
3,581,112
ELECTRONIC RELAY

Peter Laderach, Worb, Switzerland, assignor to Hasler AG, Berne, Switzerland

Filed Jan. 31, 1969, Ser. No. 795,491
Claims priority, application Switzerland, Feb. 5, 1968, 1643/68
Int. Cl. H03k 17/00
U.S. Cl. 307—241 5 Claims

An electronic relay with one input for the reception of one binary signal, with means for applying an alternating voltage or a pulse voltage, having a frequency which is high relative to the keying frequency, to one of two transformer primaries

on at least one transformer having at least one transformer secondary which is DC isolated from the aforementioned input and from the supply voltage sources, with means for rectifying the alternating voltage signal and with one output for delivering a DC voltage whose polarity depends on the



state of the input signal, the connections between the transformer secondary and the relay output being provided via the emitter-collector connections of two transistors, which are driven by currents derived from the transformer secondary and applied to the base.

3,581,113

SWITCHING DEVICE FOR DISCONNECTING CABLES

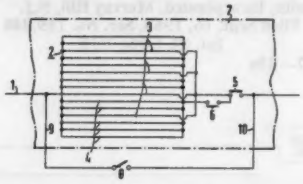
Wilhelm Kafka, Tennenlohe, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed July 25, 1968, Ser. No. 747,684

Claims priority, application Germany, Aug. 4, 1967, S111185 VIIId/21c

Int. Cl. H01v *11/10, 11/16*

U.S. Cl. 307—245 **14 Claims**



A switching device for disconnecting superconductive current-carrying cables has a superconductive circuit which provides a high resistance in the normal conducting state. A control mechanism is provided for transferring the superconductive circuit from the superconducting state to the normal conducting state.

3,581,114

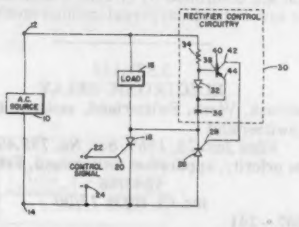
SCR SLAVING CIRCUIT

Robert E. Gregson, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Sept. 3, 1968, Ser. No. 756,972

Int. Cl. H03k *17/00*

U.S. Cl. 307—252 **5 Claims**



An SCR slaving circuit wherein first and second controlled rectifiers are connected in parallel with each other and are further connected in series with a load across an AC line. A control signal is coupled to the gate electrode of the first controlled rectifier to control the slaving action in the circuit, and rectifier control circuitry is coupled between one side of the AC line and the gate electrode of the second controlled rectifier. The rectifier control circuitry blocks gate current to the second controlled rectifier on one-half cycle of the AC line voltage and thereafter provides gate current to turn on the second controlled rectifier. The second controlled rectifier will turn on the following half-cycle of the AC line voltage provided that the first controlled rectifier was conducting the previous half-cycle of the AC line voltage.

3,581,115

PULSE GENERATOR FOR PROVIDING A PLURALITY OF PULSES IN DETERMINED PHASE POSITIONS

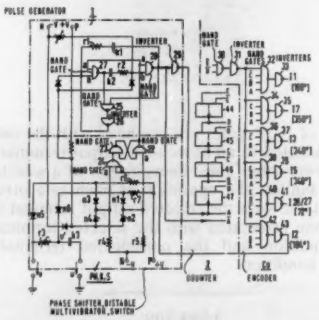
Rolf Weber, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed June 20, 1969, Ser. No. 834,946

Claims priority, application Germany, June 22, 1968, 1,762,470

Int. Cl. H03k *1/12*

U.S. Cl. 307—262 **7 Claims**



A switch is switched to its conductive condition by the output of a bistable multivibrator and transfers pulses produced by a pulse generator to a counter. The counter counts the pulses and supplies an output signal indicating the end of a counting cycle to an AND gate connected in the reset input of the multivibrator. When an auxiliary signal is supplied to the AND gate, the output signal of the counter resets the multivibrator and the switch is switched to its nonconductive condition and prevents the supply of pulses from the pulse generator to the counter.

3,581,116

DIGITAL CONTROLLED STEP VOLTAGE GENERATOR

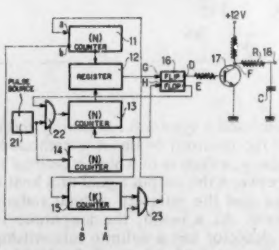
Joseph Leostic, Le Mesnil Saint-Denis, France, assignor to C.I.T. Compagnie Industrielle Des Telecommunications, Paris, France

Filed Sept. 4, 1968, Ser. No. 757,441

Claims priority, application France, Sept. 4, 1967, 119905

Int. Cl. H03k *25/00*

U.S. Cl. 307—264 **11 Claims**



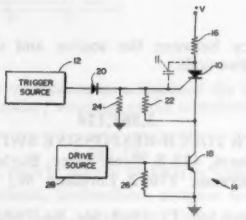
Digital-controlled generator supplying, during a major cycle, a continuous voltage which is proportional to the fraction *i*/N of a fixed voltage, with *i* variable in units from O to

N, said major cycle having a duration of K minor cycles, of which each lasts N times an elementary duration t_o.

3,581,117
THYRISTOR CIRCUIT HAVING IMPROVED TURNOFF CHARACTERISTICS

Lloyd H. Dixon, Jr., Boxford, Mass., assignor to Unitrode Corporation, Watertown, Mass.

Filed July 9, 1968, Ser. No. 743,386
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 **7 Claims**

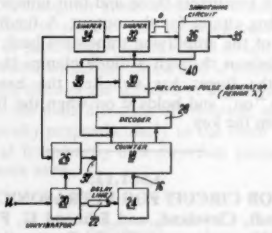


A thyristor circuit in which self-triggering which may be caused by spurious gate drive is prevented. A thyristor is switched off by interrupting the flow of cathode current while providing a gate circuit path for charging the anode-gate junction capacitor. Upon reapplication of cathode current, self-triggering cannot occur by reason of the fully charged condition of the junction capacitor.

3,581,118
METHOD OF PULSE SHAPING AND RENEWABLE DURATION VARIABLE PULSE-SHAPING CIRCUIT FOR THE APPLICATION OF SAID METHOD

Robert Van Zurk, Meylan, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed June 17, 1968, Ser. No. 737,765
Claims priority, application France, June 21, 1967, 111,389
Int. Cl. H03k *1/18*
U.S. Cl. 307—267 **10 Claims**

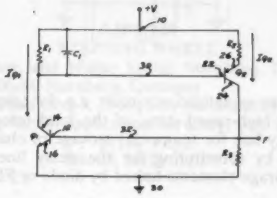


A method of pulse shaping and an electronic assembly for carrying out said method whereby incident pulses are transmitted to a counter in order to reset said counter to zero, and whereby the resultant signal is recycled, the operation is continued as long as the counter has not recorded a predetermined number and the successive pulses produced by the generator are converted to a single wide pulse. The assembly comprises a counter which has a plurality (n) of flip-flops, an element for resetting the counter to zero and coupled to the input of the assembly, a logic circuit whose inputs are coupled to each flip-flop of the counter, a pulse generator controlled by the logic circuit as well as a zero-overlap variable shaping device which follows said pulse generator and is coupled to the input of the counter as well as to the output of the assembly.

3,581,119
PHOTO-CURRENT DIVERTER

Gary Grundy, Rosemount, Minn., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Apr. 8, 1969, Ser. No. 814,335
Int. Cl. H03k *17/16*
U.S. Cl. 307—288 **3 Claims**

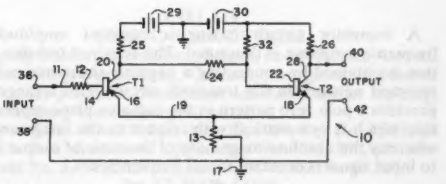


A transistorized clamping circuit is useful to quickly and efficiently divert radiation induced photocurrents to prevent damage to semiconductor systems. Through the use of a low power, fast turn-on transistor and a high power, slow turn-on transistor, the circuit is able to divert both the initial photocurrent surge and the continuing high photocurrent generated by the radiation.

3,581,120
SCHMITT TRIGGER CIRCUIT WITH VARIABLE HYSTERESIS AND INSENSITIVITY TO TEMPERATURE CHANGE

Hans H. Nord, Little Falls, N.J., assignor to The Western Union Telegraph Company, New York, N.Y.

Filed Feb. 28, 1968, Ser. No. 709,033
Int. Cl. H03k *3/15, 3/295*
U.S. Cl. 307—290 **3 Claims**

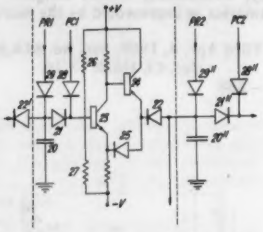


A Schmitt trigger circuit is disclosed which employs a complementary pair of transistors in a direct coupled configuration with regenerative feedback. The circuit provides means for controlling hysteresis and is substantially insensitive to temperature changes of its transistors. The circuit employs a single variable resistor in a common emitter circuit to provide symmetrical change in hysteresis.

3,581,121
DELAY LINE ARRANGEMENT

John Thomas Lawrence Sharpe, Harlow, Essex, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 26, 1969, Ser. No. 810,631
Claims priority, application Great Britain, Apr. 16, 1968, 17808/68
Int. Cl. H03k 17/28
U.S. Cl. 307—293 3 Claims

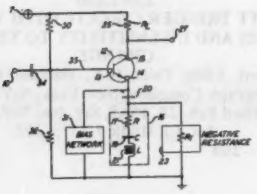


An automatic equalization circuit, e.g. for telephone channels carrying high-speed data, of the kind using a lumped-constant delay line for temporary storage of channel signals, is simplified by substituting for the delay line a chain of capacitive storage elements linked by diode or FET gates.

3,581,122
ALL-PASS FILTER CIRCUIT HAVING NEGATIVE RESISTANCE SHUNTING RESONANT CIRCUIT

Wilmer B. Gaunt, Jr., Boxford, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 26, 1967, Ser. No. 678,417
Int. Cl. H04b 3/14
U.S. Cl. 307—295 7 Claims



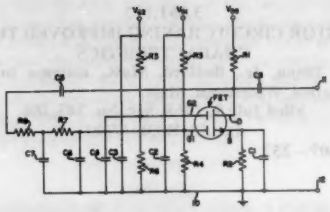
A transistor circuit having a constant amplitude vs frequency response is described. The required transfer function is obtained by connecting a negative resistance across a resonant network in the transistor circuit. This arrangement provides a pole-zero pattern in the complex plane representation which is symmetrical with respect to the imaginary axis whereby the absolute magnitude of the ratio of output signal to input signal is constant for all frequencies.

3,581,123
CIRCUIT FOR PROVIDING INDUCTIVE IMPEDANCE

Jurgen Pest, Lynchburg, Va., assignor to General Electric Company

Filed Mar. 27, 1969, Ser. No. 811,031
Int. Cl. H01p 1/24
U.S. Cl. 307—304 1 Claim

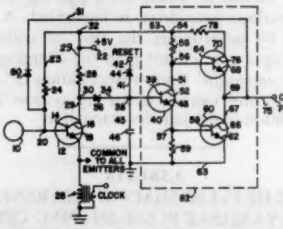
A field-effect transistor, having a source electrode, a drain electrode, a first insulated gate electrode, and a second insulated gate electrode, is provided with a feedback circuit comprising one or more series resistors and one or more shunt capacitors connected between the drain electrode and the first insulated gate electrode. This circuit provides an inductive impedance between the source and drain electrodes without inductive coils.



3,581,124
SOLID-STATE TOUCH-RESPONSIVE SWITCH CIRCUIT

Richard A. Flores, 425 S. Reese Place, Burbank, Calif., and Michael Sherman, 17042 Lorillard St., Granada Hills, Calif.

Filed Jan. 17, 1969, Ser. No. 797,719
Int. Cl. H03k 4/48
U.S. Cl. 307—308 8 Claims



A solid-state touch-responsive switch circuit using principally NPN transistors. The base of the first transistor is connected direct to a grounding key adapted preferably to be touched by a finger. The emitter of the transistor is connected to ground through a clock-pulse generator. The collector of this transistor is connected to a power supply through a suitable resistor and to the base of a second transistor through a rectifying diode. This second transistor together with transistors three and four comprise a clamping and amplifying circuit for the output. A feedback line from the outputs of the amplifying transistors back to the base of the first transistor through a diode clamps the output "on" only after the finger has switched the base of the first transistor to "on" and holds it on when the finger has been removed from the key.

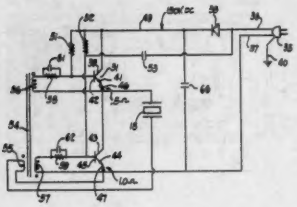
3,581,125
OSCILLATOR CIRCUIT FOR ULTRASONIC APPARATUS

John P. Arndt, Cleveland, and Edmond G. Franklin, North Canton, Ohio, assignors to Clevite Corporation

Division of Ser. No. 660,262, Aug. 14, 1967, Pat. No. 3,516,645
Filed Sept. 30, 1969, Ser. No. 862,342
Int. Cl. H01v 7/00
U.S. Cl. 310—8.1 9 Claims

An oscillator circuit is provided for ultrasonic apparatus such as ultrasonic cleaners employing a resonant transducer. The circuit includes a pair of transistors connected in series to a source of power with the transducer connected across one of the transistors in series with the primary winding of a transformer which has secondary windings connected in opposite polarity to the bases of the transistors so that one

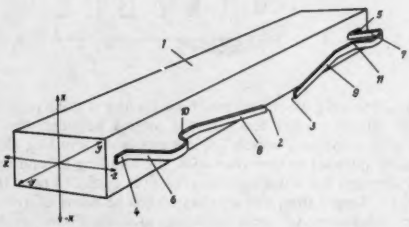
transistor is saturated while the other is nonconducting. The circuit accordingly oscillates at substantially the resonant frequency of the transducer as a result of the feedback provided by the secondary windings of the transformer.



3,581,126
MOUNTING DEVICE FOR FLEXION VIBRATORS

Luc Omlin, Neuchatel, Switzerland, assignor to Centre Electronique Horloger S. A.,, Neuchatel, Switzerland

Filed Dec. 29, 1969, Ser. No. 888,513
Claims priority, application Switzerland, Jan. 13, 1969, 402/69
Int. Cl. H01v *7/00*
U.S. Cl. 310—9.1 **10 Claims**



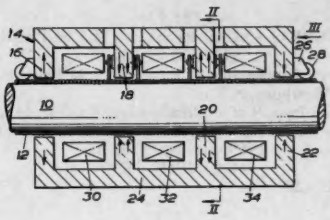
A mounting device for flexion vibrators with two vibration node axes, in particular X-Y flexion quartzes in time-measuring apparatus, which have a hold on the surfaces of the flexion vibrator in the neighborhood of nodes in the points of emergence of the vibration node axes, comprising strips of approximately rectangular cross section in connection members between flexion vibrator and securing points on a support. One end of each strip respectively is directly secured to the flexion vibrator whilst the other end is connected to the support; the long sides of the sections of the strips run practically parallel to the main direction of vibration, and the strips are bent practically perpendicularly to the main direction of vibration and at least partly in a direction perpendicular to the vibration node axes.

3,581,127
LINEAR ELECTRIC MOTOR

Kenneth Warnett, Wyke, Bradford, England, assignor to Electro-Lifts Limited, Leeds, England

Filed Apr. 21, 1969, Ser. No. 817,670
Claims priority, application Great Britain, Apr. 20, 1968, 18777/68
Int. Cl. H02k *41/02*
U.S. Cl. 310—13 **3 Claims**

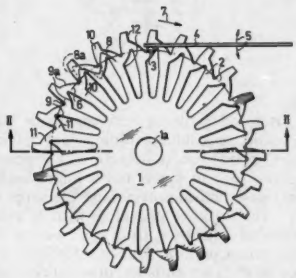
A linear motor has an armature with an electrical winding and a stator with a plurality of axially spaced pole pieces. These pole pieces are of annular formation surrounding the armature, and are joined together by a cylindrical outer casing which provides the flux path. There are field windings fitted between adjacent pole pieces, and pairs of brushes mounted on the faces of the intermediate pole pieces and urged into contact with the armature winding.



3,581,128
STEPPING WHEEL

Alfred Meisner, and Walter Spitzl, Nurnberg, Germany, assignors to Diehl, Nurnberg, Germany

Filed Oct. 3, 1969, Ser. No. 863,525
Claims priority, application Germany, Oct. 9, 1968, P 18 01 972.2
Int. Cl. H02k *7/02*
U.S. Cl. 310—21 **12 Claims**

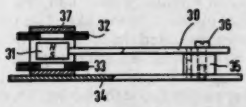


A drive for a clockworks in which a magnet is caused to oscillate adjacent a wheel in the radial direction of the wheel. An undulating magnetic path is formed on the wheel in the range of oscillation of the magnet and the configuration of the magnetic path is such that oscillation of the magnet will develop a torque on the wheel to drive it in one direction only.

3,581,129
TUNING FORK DEVICES

Wolfgang Ganter, Schramberg/Sulgen, and Friedrich Assmus, Schramberg/Wurttenberg, Germany, assignors to Messrs. Gebruder Junghons Gesellschaft mit Beschrankter Haftung, Schramberg Wurttenberg, Germany

Division of Ser. No. 816,264, Apr. 15, 1969, Pat. No. 3,529,414 which is a division of application Ser. No. 555,766, now Patent No. 3,456,137. Filed June 5, 1970, Ser. No. 43,702
Int. Cl. H02k *33/00*
U.S. Cl. 310—25 **2 Claims**



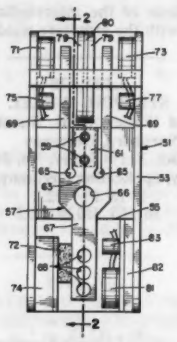
A tuning fork for timekeeping devices having two parallel tines with a permanent magnet mounted on each free end thereof and means to mount the tines on a baseplate and a

housinglike magnet-return bracket fixed to the baseplate and surrounding the permanent magnets and bearing the coil assembly.

3,581,130
COUNTERBALANCED RESILIENTLY SUPPORTED TUNING FORK

Boris F. Grib, Huntington, N.Y., assignor to Philamon Incorporated, Westbury, N.Y.

Continuation-in-part of application Ser. No. 743,445, July 9, 1968, now Patent No. 3,480,809. This application Nov. 24, 1969, Ser. No. 879,361
Int. Cl. H02k *33/00*
U.S. Cl. 310—25 **9 Claims**



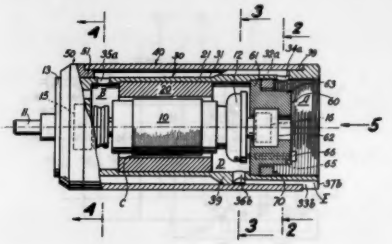
There is disclosed a tuning fork resonator with electrical drive and pickup coils and a tuning fork having a pair of tines, a common tine-junction section, a supporting portion for securing the fork in place and a pliant section between the common tine-junction portion and the supporting portion of the fork. The fork is provided with a counterbalance which is oppositely disposed from the tines of the fork with respect to the pliant section. The counterbalance counteracts the tendency of the tine ends to rotate in response to lateral acceleration force due to compliance of the pliant section and in some cases also counteracts the response to lateral acceleration force due to bending of the tines themselves. A version is disclosed in which there are two forks laterally spaced with the tine ends physically bridged together by shutters to form an elongated undulating aperture and with the counterbalance and common tine-junction portions of the two forks consisting of a common bridging structure which is relatively rigid so that the two pairs of tines of the respective fork sections are substantially in unison both as to tine vibrations and as to reaction to acceleration forces.

3,581,131
SMALL ELECTRIC MOTORS FOR DENTAL EQUIPMENT OR THE LIKE

Cestmir Richter, Nachod, Czechoslovakia, assignor to Mez Nachod, Narodni podnik, Nachod, Czechoslovakia

Filed Dec. 2, 1969, Ser. No. 881,491
Claims priority, application Czechoslovakia, Dec. 11, 1968, PV8425/61
Int. Cl. H02k *9/10*
U.S. Cl. 310—58 **8 Claims**

A relatively small electric motor adapted to be used for operating dental equipment or the like. The motor includes a rotor and a stator, situated in a motor housing which is formed at its exterior with an inlet passage extending forwardly for directing cooling air to the front of the rotor and stator to flow rearwardly through the gap therebetween. The housing is also formed with an outlet passage having a front end communicating only with the rear of this gap and with the outer atmosphere. In this way cooling air can enter from the rear of the housing into the inlet passage to flow therealong to the front where the cooling air reverses its direction of flow so as to travel rearwardly through the gap

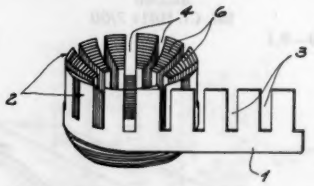


between the rotor and stator to be received in the outlet passage so as to discharge back to the outer atmosphere.

3,581,132
ROTATING ELECTRICAL MACHINE

Nikolaus Laing, 35—37 Hofener Weg. 7141, Aldingen, Germany

Filed Apr. 3, 1969, Ser. No. 813,096
Int. Cl. H02k *17/00*
U.S. Cl. 310—166 **17 Claims**

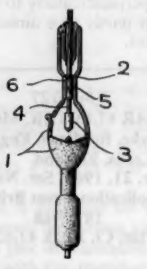


In a rotating electrical machine having a pole ring having poles which extend towards the airgap between the stator and the rotor and which are formed with winding slots extending parallel to the rotor axis, the winding extending radially through the winding slots, the pole surfaces near the airgap are larger than the smallest cross sections of the poles. The armatures of such rotating machines can in known manner be formed by spirally coiled strip. A rotating electrical machine of this kind makes a very good pump motor of the kind wherein a partition provides a sealingtight separation between the driven element and the driving element.

3,581,133
GASEOUS DISCHARGE TUBE WITH METALLICALLY COATED, ELECTRODE SUPPORT PORTIONS

Jiro Ushio, Tokyo, Japan, assignor to Ushio Electric Inc., Tokyo, Japan

Filed Dec. 23, 1968, Ser. No. 786,216
Int. Cl. H01j *17/04*
U.S. Cl. 313—43 **2 Claims**



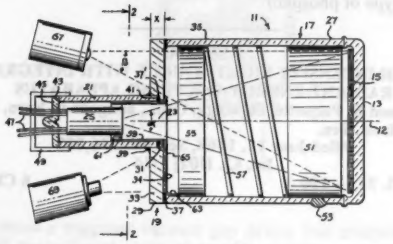
A discharge tube characterized in that a coat of an element selected from the group consisting of rhenium, niobium and

rhodium is applied to a supported portion of an electrode or an electrode supporting member of an electrode which is supported by an electrode supporting portion of a quartz or glass envelope of the discharge tube.

3,581,134
CATHODE RAY TUBE HAVING AN ANNULAR-SHAPED REAR WINDOW

Alfred D. Johnson, Seneca Falls, N.Y., assignor to Sylvania Electric Products Inc.

Filed Dec. 20, 1968, Ser. No. 785,646
Int. Cl. H01j *29/86*
U.S. Cl. 313—64 **1 Claim**



A rear-window cathode ray tube having a longitudinal axis and an envelope of substantially glass construction wherein there is oriented a cathodoluminescent screen and at least one related electron gun. The envelope has a substantially annular-shaped optical access window therein oriented in substantially symmetrical relationship to the longitudinal axis of the tube to provide a substantially annular viewing area for observing the electron impinged side of the screen.

3,581,135
COLOR TUBE ELECTRON SHIELD HAVING OUTWARDLY BOWED EDGES DIRECTED TOWARD VIEWING SCREEN TO MINIMIZE SEAL EDGE INTERFERENCE

Elgie E. Garrett, Chicago; Thomas P. De Franco, Norridge, and Nicholas B. Staples, Chicago, Ill., assignors to Admiral Corporation, Chicago, Ill.

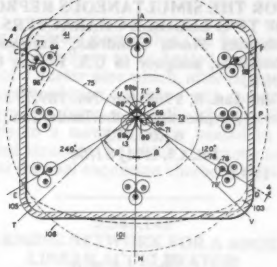
Filed Nov. 18, 1968, Ser. No. 776,338
Int. Cl. H01j *1/53, 29/40*
U.S. Cl. 313—85 **9 Claims**

An electron barrier consisting of two identical shields of semirigid formed aluminum foil having forwardly bowed edges resiliently contacting the inner wall of a color picture tube panel well below frit seal line. The shadow-mask frame includes a lip cooperating with raised portions on the shields to insure flexure of the bowed edges during installation.

3,581,136
COLOR DOT SCREEN WITH DOT FORM COMPENSATION FOR APPARENT SHIFT OF BEAM DEFLECTION CENTER

Kenneth L. Staunton, Columbus Grove, Ohio, assignor to Sylvania Electric Products, Inc.

Division of Ser. No. 665,563, Sept. 5, 1967, Pat. No. 3,499,372.
Filed July 9, 1969, Ser. No. 871,037
Int. Cl. H01j *29/32, 29/30*
U.S. Cl. 313—92B **4 Claims**



An optical system utilized for providing a tridot patterned color cathode ray tube screen wherein the dot patterns are modified in discrete screen areas to improve the registration of the electron beams with their respective phosphor dots thereby improving color purity of the display. The light source in the optical system used in effecting screen exposure has contiguously oriented light control means with portions formed to provide both symmetrical and unsymmetrical exposure illumination. Thus, by utilizing unsymmetrical exposure, patterns of elongated dots are disposed on different discrete portions of the screen for each of the respective phosphors to achieve improved beam dot registration.

3,581,137
ELECTRIC LAMP HAVING AN ENVELOPE COMPOSED OF PHOTORESISTANT SODA-LIME SILICATE GLASS

Edward G. F. Arnott, Wilkinsburg, and Daniel W. Lewis, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 741,370, July 1, 1968, which is a continuation-in-part of application Ser. No. 657,123, July 31, 1967. This application July 15, 1968, Ser. No. 744,832
Int. Cl. H01j *1/63, 61/30, 61/35*
U.S. Cl. 313—109 **16 Claims**

The light output and lumen maintenance of an electric lamp that generates both visible and ultraviolet radiations (e.g., a fluorescent, an incandescent, or a high-pressure mercury vapor discharge lamp) is enhanced by utilizing an envelope that is composed of a modified soda-lime silicate glass which has a low initial coefficient of absorption in the visible region (below about 0.05 cm. $^{-1}$), and inhibits the discoloration or "solarization" effect of impinging ultraviolet-radiation. The absorption coefficient in the visible region is maintained below approximately 0.4 cm.$^{-1}$ after prolonged exposure of the envelope to ultraviolet radiation by controlling the Fe_2O_3 content and adding selected amounts of TiO_2 or MoO_3, or mixtures thereof, to the glass during manufacture. The preferred ranges are between 0.8 percent and about 3

percent by weight TiO_2 and from about 0.5 percent to 1 percent by weight MoO_3 when these materials are added as

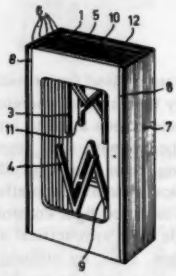
separate components. The Fe_2O_3 content does not exceed about 0.07 percent by weight.

3,581,138

GAS DISCHARGE TUBE WITH COLD CATHODE SUITABLE FOR THE SIMULTANEOUS REPRODUCTION OF TWO LEGIBLE CHARACTERS

Adrianus Anthonius Maria Hendriks, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 8, 1969, Ser. No. 789,773
Claims priority, application Netherlands, Jan. 12, 1968, 6,800,473
Int. Cl. H01j *61/66*
U.S. Cl. 313—109.5 2 Claims



A gas discharge tube for reproducing two independently switchable legible characters which adjoin each other and constitute two groups, the characters being secured to annular frames of equal dimensions but having dimensions which are smaller than the frame and the groups being surrounded by a partially perforated anode. The two groups of characters are associated with a single electrode set. Since the characters are smaller than the associated frame, two characters associated with different groups can be reproduced.

3,581,139

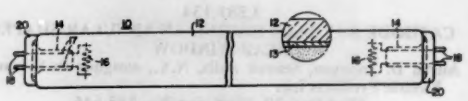
FLUORESCENT LAMP HAVING TITANIUM DIOXIDE-CONTAINING GLASS ENVELOPE AND REDUCED PHOSPHOR WEIGHT

Harry H. Haft, Whippany, and Robert W. Repsher, Kenelon, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 20, 1969, Ser. No. 808,801
Int. Cl. H01j *61/30, 61/42*
U.S. Cl. 313—109 6 Claims

TiO_2 is included as a constituent in the soda-lime silicate glass envelope of a fluorescent lamp in an amount sufficient to chemically stabilize the glass an thus permit the use of a thinner phosphor coating without decreasing the light output of the lamp or impairing its lumen maintenance. Up to 10 percent by weight TiO_2 is employed and less than 2 percent by weight is preferred to minimize lamp cost. The TiO_2 also inhibits solarization and the resultant darkening of the envelope under the influence of the impinging ultraviolet radiations generated within the lamp during operation.

With 1.25 percent by weight TiO_2 in the glass, the amount of phosphor required per lamp is reduced by 30 percent without decreasing the light output or lumen maintenance. In the case of calcium halophosphate type phosphor, the



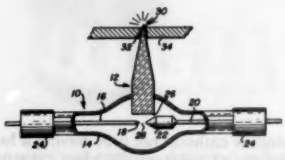
phosphor weight per lamp is reduced by 40 percent without impairing the lumen maintenance and with only a slight drop in light output compared to a conventional lamp utilizing the same type of phosphor.

3,581,140

HIGH INTENSITY LIGHT SOURCE WITH INTEGRAL RADIANT-ENERGY-COUPLING APPARATUS

Raymond E. Paquette, Saratoga, Calif., assignor to Varo, Inc., Garland, Tex.

Filed June 11, 1968, Ser. No. 736,082
Int. Cl. H01j *5/16*
U.S. Cl. 313—110 6 Claims



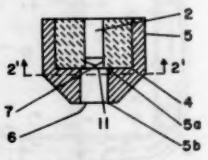
An optically efficient light-transmitting rod is formed integral with the envelope of a high intensity illumination producing means such that one end of the rod is positioned proximate the luminant source, and the other is shaped into a suitable utilization form or is adapted so as to provide a means with which to couple the radiant energy to a utilization means.

3,581,141

SURFACE GAP SPARK PLUG

Richard C. Beaubier, Royal Oak, Mich., assignor to Ethyl Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 776,441, Nov. 18, 1968, now abandoned. This application Apr. 7, 1969, Ser. No. 813,947
Int. Cl. H01t *13/32, 13/52*
U.S. Cl. 313—130 17 Claims

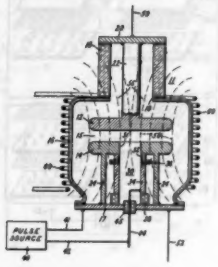


A surface gap spark plug having improved resistance to fouling is described. A method of operating an internal combustion engine and other devices, which utilize a fuel containing an organometallic additive is also disclosed.

3,581,142
TRIGGERED VACUUM GAP DEVICE WITH MEANS FOR REDUCING THE DELAY TIME TO ARC-OVER THE MAIN GAP

Raymond L. Boxman, Cambridge, Mass., assignor to General Electric Company

Continuation-in-part of Ser. No. 792,709, Jan. 21, 1969.
Filed Mar. 19, 1969, Ser. No. 808,617
Int. Cl. H01j 1/50
U.S. Cl. 313—162 6 Claims

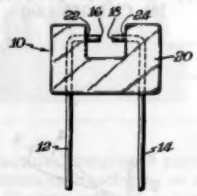


Discloses a triggered vacuum gap device that comprises a pair of spaced-apart main electrodes defining a main gap therebetween and triggering means adjacent one of the main electrodes but relatively remote from the other for causing arc-over of said main gap upon activation of said triggering means. For reducing the time delay between activation of the triggering means and arc-over of the main gap when the relatively remote electrode is negative, means is provided for developing a magnetic field generally parallel to the electric field between the electrodes in the region of the triggering means.

3,581,143
NONTRACKING WIRE SPARK GAP COMPONENT

John E. Dornfeld, Mequon, Wis., assignor to Sprague Electric Company, North Adams, Mass.

Filed Jan. 16, 1969, Ser. No. 791,683
Int. Cl. H01j 17/00, 21/00
U.S. Cl. 313—325 4 Claims

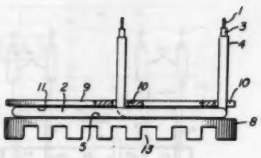


Each of two noncontacting wire leads has a face of one extremity in registration a predetermined fixed distance from its counterpart to form a spark gap therebetween. Each lead is bent so that the extensions of the leads are oppositely disposed and spaced from each other by a distance substantially greater than the spark gap. A mass of nonconducting material covers both of the bends, and bridges the lead extensions near the bends so as to fix the spacing of the spark gap. The mass is also set back on both sides of the spark gap a distance at least sufficient to assure avoidance of exposure of the mass to carbonizing temperatures during sparking within the voltage rating range of the unit.

3,581,144
METAL-CLAD INSULATED ELECTRICAL HEATER

James E. Beggs, Schenectady, N.Y., assignor to General Electric Company

Filed Mar. 27, 1969, Ser. No. 811,067
Int. Cl. H01j 1/24
U.S. Cl. 313—340 8 Claims

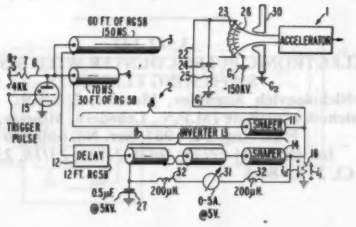


A low mass insulated heater that can be bonded with low thermal drop to an object to be heated consists of a planar arrangement of a heater wire which, after being covered with a thin coating of insulation, is coated with material that is sintered or alloyed to form a metallic sheath. The sheath is brazed directly to a member to be heated to form an integrally bonded structure in which the composite materials all have similar thermal expansion characteristics.

3,581,145
PULSE-FORMING NETWORK FOR A SHORT PULSE LINEAR ACCELERATOR

Dennis E. Morris, Sunnyvale, Calif., assignor to Varian Associates, Palo Alto, Calif.

Continuation-in-part of Ser. No. 792,709, Jan. 21, 1969.
Filed Mar. 3, 1969, Ser. No. 803,921
Int. Cl. H01j 25/36
U.S. Cl. 315—30 4 Claims



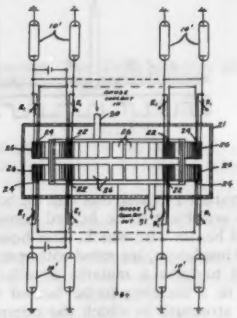
A pulse-forming network is disclosed as employed for pulsing the beam of a microwave linear accelerator to provide a train of beam pulses, such pulses being on the order of 2 nanoseconds long. The pulse-forming network includes a pair of open-circuited coaxial cables connected in parallel between a source of potential and an adder. The adder supplies a pulse output to the cathode of the electron gun of the accelerator. One of the parallel branches of the pulse-forming network includes a series connection of one of the coaxial cables, and a delay, and a pulse inverter. The inverted and noninverted pulses obtained by simultaneously shorting the charged coaxial lines to ground are added in the adder to produce a resultant negative pulse applied to the cathode of the gun for turning the gun on for the short 2 nanoseconds. Ferrite-loaded coaxial pulse shapers are disposed in each of the parallel branches for sharpening the leading edge of the resultant negative pulse. One of the distributed coaxial lines is substantially longer than the other to make the positive inverted pulse longer than the negative noninverted pulse, such that the gun is held in the OFF condition for a period following each of the pulses to prevent unwanted dark current. A coupling capacitor is connected between the pulse inverter and ground for holding off a positive quiescent DC bias potential applied to the cathode of the gun. A variable DC current is fed through one of the pulse shapers for varying the pulse width of the resultant pulse.

3,581,146

BALLAST FOR A PLURALITY OF PARALLEL GASEOUS DISCHARGES

Alan E. Hill, 5444 A, Rte. 5, Albuquerque, N. Mex.

Filed July 29, 1969, Ser. No. 845,808
Int. Cl. G05f 1/06
U.S. Cl. 315—180 6 Claims



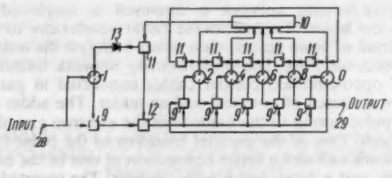
A plurality of gaseous discharge tubes connected to a common power supply has a vacuum tube connected in series with each gaseous discharge tube to provide ballast for the individual gaseous discharge tubes, a water-cooled, heavy duty anode is provided with a plurality of cathodes positioned adjacent the anode. A discharge tube is connected in each of the cathode circuits. Negative feedback is used to limit the current through each discharge tube. Variable feedback resistors permit balancing of the discharge paths.

3,581,147

ELECTRONIC PULSE COUNTER WITH BISTABLE SWITCHING ELEMENTS

Lev Nickolaevich Korablev, Moscow, U.S.S.R., assignor to Fizichesky Institute IM.P.N., Lebedera, Moscow, U.S.S.R.

Filed Aug. 14, 1967, Ser. No. 660,326
Int. Cl. H01j 17/36; H03k 21/32, 23/18, 23/28
U.S. Cl. 315—84.5 13 Claims



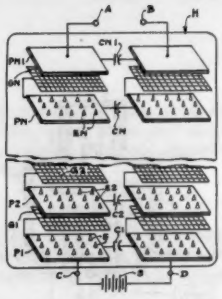
Several different embodiments of the invention in the form of different pulse counters are disclosed involving the use of switching elements and particularly cold-cathode tubes in association with coincidence circuits to provide a pulse counter, there being particularly employed a one-way feedback circuit which has a reduced number of switching elements, smaller than the conversion factor and capacitance of the counter, the input of the first element or stage being directly connected to the counter input, and the combined outputs of at least two last elements or stages of the counter being connected by a unidirectional feedback circuit for returning the preceding elements or stages to the initial zero condition.

3,581,148

DIRECT CURRENT STATIC TRANSFORMER

Roger Raoul Brignet, 98, Rve Saint Spire, Corbeil-Essones, France

Continuation-in-part of application Ser. No. 637,470, May 10, 1967. This application June 4, 1969, Ser. No. 830,312
Int. Cl. H05b 37/00, 39/00, 41/14
U.S. Cl. 315—227 4 Claims



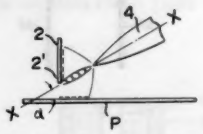
A direct current static transformer for continuous operation comprising a series of successive stages each including a first conductive plate having a multiplicity of thin, needlelike individual electrodes directed toward a second conductive plate, the second conductive plate having a relatively smooth surface facing toward the needle electrodes. Each stage further includes an electrically conductive grid interposed between the first and second plates, the grid being electrically connected to the first plate. The second plate for one stage constitutes the first plate for the next succeeding stage in the transformer. In a preferred construction, there are two such series of successive stages, one series connected to the positive terminal of a DC supply and the other series connected to the negative terminal, with a capacitor connected between the corresponding plates of the two series in each stage.

3,581,149

CORONA DISCHARGING DEVICE FOR ELECTROPHOTOGRAPHIC PROCESS

Hiroshi Tanaka, and Masayoshi Ishihara, both of Tokyo, Japan, assignors to Canon Camera Kabashiki Kaisha, Tokyo, Japan

Filed July 11, 1968, Ser. No. 744,117
Claims priority, application Japan, July 14, 1967, 45-468/67
Int. Cl. H05h 1/00
U.S. Cl. 317—4 8 Claims

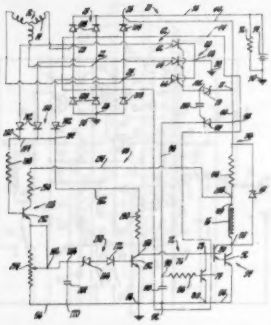


Apparatus for use in imparting charge to a member including a conductive element having an end juxtaposed with the surface of the member being charged and a needle-form corona discharge electrode providing a discharge directed principally onto the conductive element. The corona discharge electrode is disposed in a plane substantially nonperpendicular to the member being charged and intersecting the plane containing the conductive element.

3,581,150
OVERVOLTAGE PROTECTION CIRCUIT FOR A GENERATOR REGULATOR SYSTEM

Thomas E. Kirk, and Gerald H. Stenklyft, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 8, 1970, Ser. No. 26,707
Int. Cl. H02h 3/22; H02j 7/14
U.S. Cl. 317—16 2 Claims

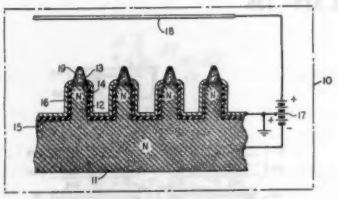


An overvoltage protection circuit for a vehicle electrical generating system provides a plurality of controlled rectifiers connected to the generator output winding for shunting high transient voltages to ground. A control transistor having a time delay biasing circuit is connected to the field winding excitation circuit for holding the field winding deenergized during the high voltage condition. A single overvoltage detecting device is used to render both the plurality of controlled rectifiers and the control transistor conductive.

3,581,151
COLD CATHODE STRUCTURE COMPRISING SEMICONDUCTOR WHISKER ELEMENTS

Willard S. Boyle, Summit, and Jack A. Morton, South Branch, both of, N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Sept. 16, 1968, Ser. No. 762,296
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 9 Claims



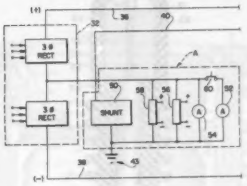
Cold cathode structures comprise a plurality of semiconductor whisker elements each including an electronic barrier near the free end. Electron emission is enhanced by a high external field that is concentrated at the tip of each whisker element.

3,581,152
GROUND PROTECTION AND DETECTING FOR HIGH VOLTAGE DC TRANSMISSION SYSTEM

Lloyd F. Hunt, 221 Rocky Point Road, Palos Verdes Estates, Calif.

Filed Mar. 16, 1970, Ser. No. 19,750
Int. Cl. H02h 3/16
U.S. Cl. 317—18D 10 Claims

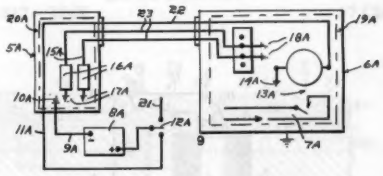
A grounding system for high voltage DC transmission lines which provides protection for and detection of changes in the normal operating mode of the high voltage system. The transmission system has a single connection to the earth, at a first point, all other points remote from the first being insulated from their local earth points. Common ground points are provided for all the equipment of the transmission system in each particular area, and these common ground points are then referenced by way of a return line to the single earth connection. Current sensitive means are provided at the single earth connection and voltage sensitive means are provided at the remote locations to detect fault conditions and, where necessary, to shut down the system.



3,581,153
CONTROL CIRCUITRY TO PREVENT USE OF A SECONDARY CIRCUIT WITHOUT STATIC ELECTRICITY GROUNDS

John Joyce, 179 Thacher St., Milton, Mass.

Filed Apr. 8, 1969, Ser. No. 814,344
Int. Cl. H02h 1/02
U.S. Cl. 317—18 7 Claims



Control circuits are disclosed to prevent the use of a secondary circuit, each control circuit including first and second grids with the control circuit including a relay in control of the secondary circuit and having a grounded connection with the second grid and parallel leads each including a resistor and having a grounded connection with both grids, the resistors being operative to prevent the closing of the secondary circuit unless all the grounds of the parallel leads are effective.

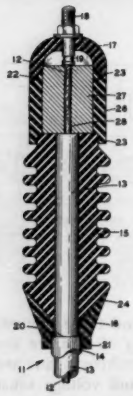
3,581,154
SURGE-DEFLECTING CABLE TERMINATOR

J. Hebden Willox, 917 Newcastle Ave., Westchester, Ill.

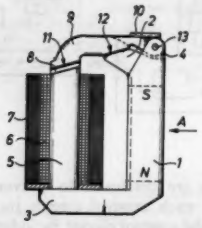
Filed Nov. 18, 1968, Ser. No. 877,716
Int. Cl. H02h 9/06
U.S. Cl. 317—61.5 20 Claims

A weathertight surge-responsive electrical cable terminator, adapted for use in connecting an underground insulated cable to an exposed overhead conductor, includes a housing of insulating material in which the cable end is hermetically sealed alongside a member of magnetic material. Lightning surges transmitted by the exposed overhead conductor to the point of connection are deflected by the electromagnetic

cooperation of the magnetic member with the surge current upon its appearance in the terminator. The terminator is effective either as a reflector to turn the surge back to the overhead conductor, or as a diverter to direct the surge to an associated lightning arrester.

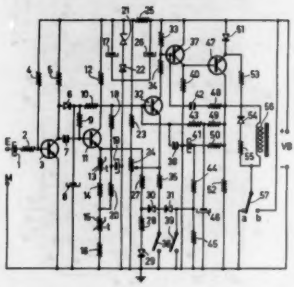


3,581,155
ELECTROMAGNETIC MAKE-AND-BREAK IGNITION DEVICE FOR A POCKET LIGHTER
Richard Halm, 7061 Battmannsweiler Kreis, Schorndorfer Strasse 8, Esslingen Am Nekar, Germany
Filed Mar. 18, 1969, Ser. No. 808,261
Claims priority, application Austria, Mar. 21, 1968, 2,839
Int. Cl. F23g *3/01*
U.S. Cl. 317—81 **7 Claims**



A make-and-break magneto especially for a pocket lighter having a substantially rectangular shape and comprising a permanent magnet forming at least a part of one side of the rectangle, magnetic conductors secured to and carrying the magnet, at least a part of one of the conductors forming a core which forms the opposite side of the rectangle and carries coil windings, and an armature pivotably connected by a bearing to the end of the magnet-carrying side; the upper end of the magnet itself or of one of the magnetic conductors forming an extension of the magnet being bent obliquely upwardly in the direction toward the axis of the core, and the upper ends of the core and of the extensions forming contact surfaces which are obliquely inclined to the axis of the core and extend within a common plane, and the armature having corresponding contact surfaces which are likewise inclined to said axis and extend within a common plane. The armature is pivotably mounted in such a position that, when the magnetic circuit is closed by said armature, the two planes of the associated contact surfaces coincide with each other and these contact surfaces engage fully with each other.

3,581,156
ELECTRONIC ARRANGEMENT FOR CONTROLLING AN ELECTROMAGNETIC CLUTCH
Raymond Dolbachian, Meudon, and Claude Lefevre, Saint Maur, both of, France, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 6, 1969, Ser. No. 797,115
Claims priority, application France, Feb. 16, 1968, 140113
Int. Cl. F16d *67/00*; H01h *47/32*
U.S. Cl. 317—123 **10 Claims**

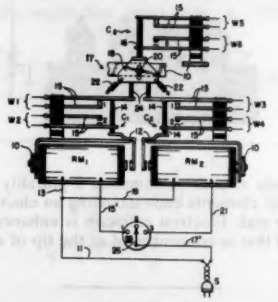


An automatic clutch control system for use in a motor vehicle includes an engine speed transducer that supplies a speed voltage to a control circuit. A power circuit controlled by the control circuit supplies current to the operating coil of the automatic clutch. The control circuit produces control voltages at distinct operating threshold levels for the power circuit that correspond to four engine operating zones, i.e. engine standstill, idling, transmission gear drive, and high speed drive.

ERRATUM

For Class 317—124 see:
Patent No. 3,579,703

3,581,157
ELECTRICAL RELAY CIRCUITRY
Frank B. Hall, Chicago, Ill., assignor to Pettibone Corporation
Filed Jan. 17, 1969, Ser. No. 792,102
Int. Cl. H01h *47/16*
U.S. Cl. 317—136 **5 Claims**



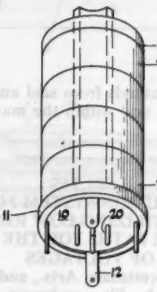
Electrical relay circuitry for performing useful work by the selective closing of work circuits. In one form of circuitry, two independent relay magnets with associated contact groups are effective upon selective energization to reverse their respective contact groups, a third contact group being automatically reversed upon energization of either relay magnet. In another form, selective energization of the magnets reverses their respective contact groups, but the third contact group is not reversed unless both magnets are energized.

3,581,158

VARIABLE STACK ELECTRICAL CONDENSER

Jerry Sbirek, P.O. Box 1861, Monterey, Calif.

Filed May 19, 1969, Ser. No. 825,584
Int. Cl. H01g 9/08, 1/02
U.S. Cl. 317—230 6 Claims



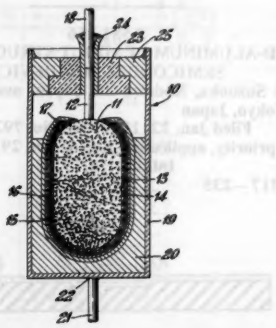
One or more toroidally shaped electrical condensers are mounted on a standard base unit provided centrally thereof with an externally threaded post that is coaxial of the condensers. A nut threaded on the post holds the condensers on the post and against the base. Metal cases for the condensers form their ground connections and all the cases ground to a peripheral metal band on the base. Contact strips are secured longitudinally of the post and are electrically connected to the base terminals. Each condenser has a spring tab forming its other connection that contacts one of the strips.

3,581,159

SOLID ELECTROLYTE CAPACITOR HAVING IMPROVED COUNTERELECTRODE SYSTEM

John Piper, Greenville, S.C., and Carl F. Leitten, Jr., Indianapolis, Ind., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 12, 1969, Ser. No. 875,790
Int. Cl. H01g 9/05
U.S. Cl. 317—230 24 Claims



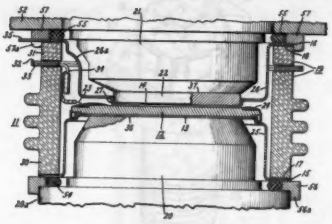
A solid electrolytic capacitor and method for the production thereof comprising a body of an anodizable metal, an oxide layer produced by anodization of the body as a dielectric, a solid semiconductive electrolyte layer over the oxide, and an electrically conductive counterelectrode system consisting of a layer of carbon particles on the solid electrolyte, a thin-walled copper lamellar coating over the carbon layer, and an electrical connection to the copper lamellar coating.

3,581,160

SEMICONDUCTOR RECTIFIER ASSEMBLY HAVING HIGH EXPLOSION RATING

Dante E. Piccone, and Daniel B. Rosser, both of Philadelphia, Pa., assignors to General Electric Company

Filed Dec. 23, 1968, Ser. No. 786,251
Int. Cl. H01l 1/08, 1/14
U.S. Cl. 317—234R 10 Claims



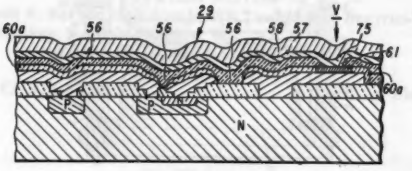
The main electrodes of a sealed semiconductor device are clamped between opposing metal members of a pressure assembly, and gaps between opposite ends of the insulating sidewall of the device and the respectively adjacent metal members are closed by resilient O-rings disposed in compression in the gaps and respectively circumscribed by rigid retaining rings.

3,581,161

MOLYBDENUM-GOLD-MOLYBDENUM INTERCONNECTION SYSTEM FOR INTEGRATED CIRCUITS

James A. Cunningham, and Robert S. Clark, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of application Ser. No. 606,064, Dec. 30, 1966, now abandoned. This application Jan. 2, 1969, Ser. No. 791,862
Int. Cl. H01l 5/02
U.S. Cl. 317—234R 17 Claims



There is disclosed a multilevel contact and interconnection system for integrated circuits comprising at least three levels. Ohmically connecting to the semiconductor through an opening in its insulating layer is a first layer of molybdenum. The second layer is of gold and the third of molybdenum. This system is virtually alloyless since the molybdenum does not alloy with the semiconductor material or the gold.

3,581,162

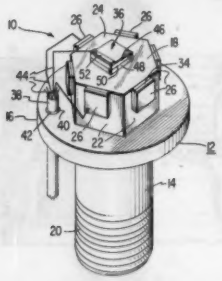
OPTICAL SEMICONDUCTOR DEVICE

William Richard Wheatley, Somerville, N.J., assignor to RCA Corporation

Filed July 1, 1969, Ser. No. 838,198
Int. Cl. H01l 1/12, 9/06
U.S. Cl. 317—234 8 Claims

An optical semiconductor device comprises a metal supporting member having a mounting stem, a flat head on one end of the stem and a hub on the head. The hub has an end surface and a peripheral surface. A plurality of electroluminescent semiconductor diodes are mounted in spaced relation on the peripheral surface of the hub so that the supporting member is one terminal of each of the diodes. A terminal

wire extends through and is insulatingly supported on the head of the supporting member. The terminal wire is electrically connected to each of the diodes so as to be the other terminal of the diodes. The diodes are all positioned so that they are adapted to emit light in the same direction away



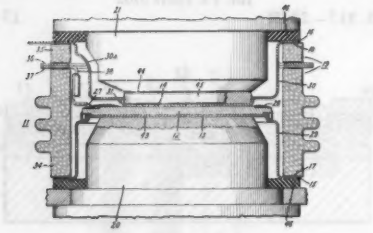
from the head of the supporting member. An additional electroluminescent semiconductor diode may be mounted on the end surface of the hub and electrically connected to the supporting member and the terminal wire. The additional diode is also adapted to emit light in the same direction as the other diodes.

3,581,163

HIGH-CURRENT SEMICONDUCTOR RECTIFIER ASSEMBLIES

Lars O. Eriksson, West Chester, Pa., assignor to General Electric Company

Filed Apr. 9, 1968, Ser. No. 719,966
Int. Cl. H01l *1/02, 1/14*
U.S. Cl. 317—234R **8 Claims**



The thermal cycling capability of a high-current semiconductor device is significantly increased by disposed a tungsten strain buffer in compression between a terminal of the device housing and an external pressure applying thrust member.

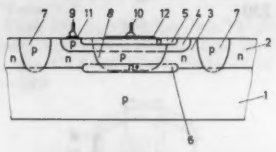
3,581,164

JUNCTION CAPACITANCE COMPONENT, ESPECIALLY FOR A MONOLITHIC MICROCIRCUIT

Hans Pfander, Freiburg; Harald Schilling, Gundelfingen, and Gerhard Schwabe, Freiburg, all of, Germany, assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed June 18, 1969, Ser. No. 834,428
Claims priority, application Germany, June 26, 1968, P 17 64 556.6
Int. Cl. H01l *5/00, 7/02*
U.S. Cl. 317—234 **5 Claims**

This is a junction capacitance component which can be simultaneously formed with other planar transistors on a monolithic integrated circuit. The capacitance component achieves an improved specific capacity for the same voltage breakdown by forming an intermediate region between a wafer and an epitaxial layer, said layer containing a highly doped emitter region base and collector regions, and a highly



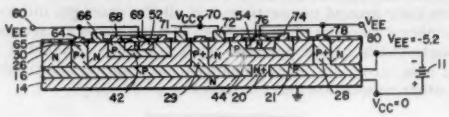
doped region which extends from said emitter, through said base and collector to, and within the marginal area of, said intermediate region.

3,581,165

VOLTAGE DISTRIBUTION SYSTEM FOR INTEGRATED CIRCUITS UTILIZING LOW RESISTIVITY SEMICONDUCTIVE PATHS FOR THE TRANSMISSION OF VOLTAGES

Walter C. Seelbach, Scottsdale, Ariz., and Kyriakos E. Lampathakis, Lake Park, Fla., assignors to Motorola, Inc., Franklin Park, Ill.

Continuation-in-part of application Ser. No. 610,915, Jan. 23, 1967, now abandoned. This application Oct. 30, 1967, Ser. No. 683,078
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 **7 Claims**



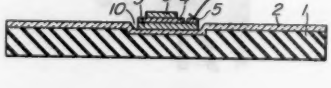
A voltage distribution system formed in a monolithic integrated circuit structure and a process for making same. Adjacent P-type and N-type conductivity semiconductor layers form respective portions of separate conductive paths for distributing electrical potentials to semiconductor devices or other components within the same integrated structure. P-type and N-type channels are formed within various portions of the semiconductor layers to complete the conductive paths, and reverse biased junctions electrically isolate the conductive paths and prevent electrical interference between same.

3,581,166

GOLD-ALUMINUM LEADOUT STRUCTURE OF A SEMICONDUCTOR DEVICE

Takayuki Suzuoka, Kodaira-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 22, 1969, Ser. No. 792,992
Claims priority, application Japan, Jan. 29, 1968, 43/5484
Int. Cl. H01l *5/02*
U.S. Cl. 317—235 **5 Claims**



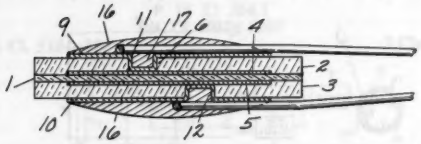
A semiconductor device, wherein a metal plate having first and second metal layers is fitted on one principal surface of an insulating substrate on which a plurality of leadout leads extend; a semiconductor substrate with a plurality of integrated circuit elements being fitted to said first metal layer; said second metal layer and the first lead being connected by a first connecting wire; and the electrodes of said circuit elements being connected to the remaining leads by the second connecting wires.

3,581,167

REINFORCED CERAMIC CAPACITOR AND METHOD OF MAKING THE SAME

Donald J. Veater; Sumner B. Hill, and Lawrence J. Ruffner, all of State College, Pa., assignors to Erie Technological Products, Inc.

Continuation of application Ser. No. 761,436, Sept. 23, 1968, now abandoned. This application Feb. 19, 1970, Ser. No. 011,929
Int. Cl. H01g 1/13
U.S. Cl. 317—261 7 Claims



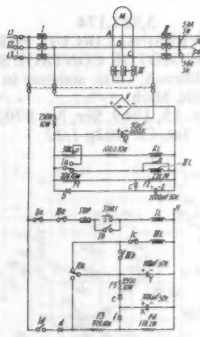
A capacitor having an extremely thin central layer (as little as 0.0002 inches) with electrodes sintered on both faces and surrounded by ceramic margins. The central layer is sandwiched between thick outer ceramic layers in face to face engagement with the electrodes and margins with the margins sintered to the outer ceramic layers to provide a unitary ceramic assembly. The outer layers have perforations providing access to the electrodes and have terminal coatings which extend into the perforations to make contact with the electrodes. Leads are soldered to and extend from the terminal coatings.

3,581,168

DYNAMIC BRAKING OF INDUCTION MOTORS

Donald Kirkby, Heckmondwike, England, assignor to BBA Group Limited, Cleckheaton, Yorkshire, England

Filed Mar. 10, 1969, Ser. No. 805,409
Claims priority, application Great Britain, Mar. 19, 1968, 13192/68
Int. Cl. H02p 3/24
U.S. Cl. 318—211 24 Claims



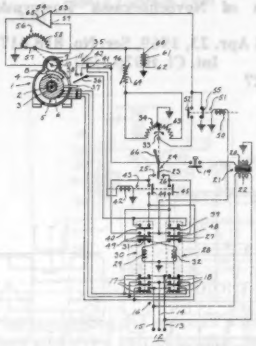
The disclosure of this specification relates to a system for braking an induction motor comprising normally nonconducting switch means operable, when conducting, to connect capacitance means to the primary winding of the motor to effect braking of the motor and means responsive to the interruption of the supply to the motor to render the normally nonconducting switch means conducting for a period of time sufficient to bring the motor to rest.

3,581,169

REVERSING CONTROL FOR AN INDUCTION MOTOR

Romeo T. Calud, Rockford, Ill.; David L. Hansbrough, South Milwaukee, Wis., and Dean R. Zaumseil, Rockford, Ill., assignors to Bucyrus-Erie Company, Milwaukee, Wis.

Filed June 2, 1969, Ser. No. 829,449
Int. Cl. H02k 17/02
U.S. Cl. 318—214 9 Claims



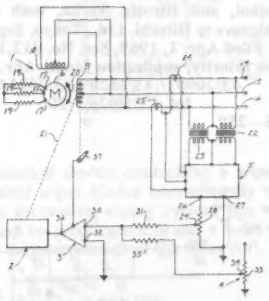
An induction motor with two equal stator segments, one being rotatably adjustable, has an electrical actuator mounted on it and controlled by a feedback control system to position the rotatably adjustable stator segment. A speed control potentiometer is ganged for operation with a master switch, which can energize either of two relays to connect the stator across a powerline for forward or reverse rotation. A limit switch is actuated by the rotationably adjustable stator segment to override the control by the master switch of the relays throughout a predetermined range of stator segment positions.

3,581,170

AUTOMATIC TORQUE CONTROL FOR A DUAL STATOR MOTOR

Donald E. Barber, Oak Creek, Wis., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Nov. 19, 1969, Ser. No. 878,032
Int. Cl. H02p 7/36
U.S. Cl. 318—214 5 Claims



A control system for a dual stator induction motor has a rotary actuator which rotates one stator to thereby control the torque produced by the motor. This torque is sensed by a watts transducer connected to measure the electrical power supplied to the motor and which generates a torque feedback signal that is linearly related to the electrical power being supplied. This feedback signal is summed with a manually adjustable reference signal which summed signal is amplified to produce a torque control signal that drives the rotary actua-

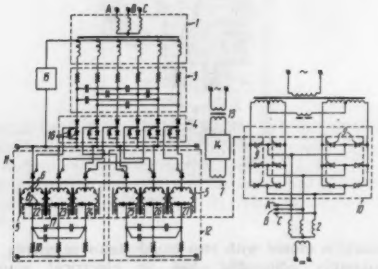
tor. The reference signal is set by the operator for the desired torque and the rotary actuator continuously positions the stator in response to the resulting torque control signal to maintain a relatively constant torque as the motor speed varies.

3,581,171

DEVICE FOR CONTROL OF A RECTIFIER MOTOR

Boris Konstantinovich Baranov, Spusk Gertsena, 11, kv. 26, and Boris Alexandrovich Stromin, ulitsa Sportivnaya 25, kv. 52, both of Novocherkassk Rostovaskoi Oblasti, U.S.S.R.

Filed Apr. 23, 1969, Ser. No. 818,617
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 **4 Claims**



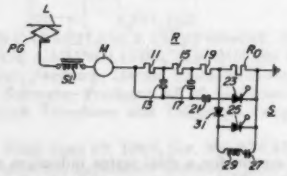
A device for control of a rectifier motor with an implicit DC network including output transformers connected to the control electrodes of the rectifying elements in a frequency (and phase) changer, and motor-voltage and supply-voltage transformers, in which the primaries of the output transformers are connected in series with the secondaries of the supply-voltage transformer, while in series with them are connected diodes which, along with said secondaries, form rectifiers producing as many impulses as there are in the output of the rectifier section of the frequency (and phase) changer, the DC circuits of said rectifiers containing commutation switches whose rectifying-element control circuits are connected to the secondaries of the motor-voltage transformer. The device may be used in a variety of electric-drive types where speed control over a broad range is sought.

3,581,172

CONTROL SYSTEM OF ELECTRIC MOTOR

Takashi Tsuboi, and Hiroshi Narita, both of Katsuta-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 1, 1969, Ser. No. 812,168
Claims priority, application Japan, Apr. 1, 1968, 43/20981;43/25209;43/25214
Int. Cl. H02p *1/20*
U.S. Cl. 318—259 **13 Claims**



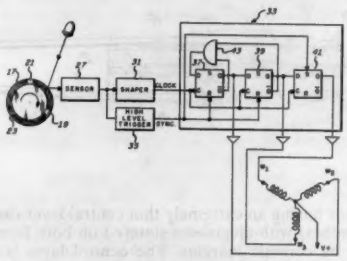
A control system for electric motors effecting variation of the electric motor current in a step-by-step operation in successive stages, second impedance control means for controlling the variation of said current by said first means in a linear fashion by providing an impedance varying from a minimum value to a maximum value during each stage of operation and control means for effecting a transition of first means from one stage to the next in response to detection of said motor current reaching a predetermined value and simultaneously changing the impedance of said second means to said maximum value.

3,581,173

LIGHT ACTUATED BRUSHLESS DC MOTOR

John L. Hood, and Joe H. Mc Gee, both of Charlottesville, Va., assignors to Sperry Rand Corporation

Filed June 9, 1969, Ser. No. 831,340
Int. Cl. H02k *29/00*
U.S. Cl. 318—254 **8 Claims**



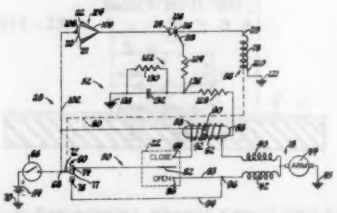
A brushless DC motor contains an odd number of stator windings. A cylindrical member is mounted integrally on the rotor and contains a narrow, axially disposed reflecting stripe on its surface corresponding to each stator winding. One of the stripes may have a high degree of light reflectivity, the other stripes may have an intermediate degree of reflectivity, the cylindrical surface between the stripes has a low degree of reflectivity. A stationary light source is arranged to reflect a narrow beam of light from the cylindrical surface onto a sensor. Each burst of light reaching the sensor when a stripe traverses the light beam produces an electrical pulse output from the sensor which switches a sequence steering circuit into a new stable state. The steering circuit has a different stable state for each stator winding and is connected to energize a different individual stator winding for each state. Successive pulses from the sensor switch the steering circuit so as to energize individual stator windings in a cyclical sequence. A burst of light from the high reflectivity stripe further actuates a high level trigger circuit that synchronizes the steering circuit during each revolution of the rotor.

3,581,174

AUTOMATIC REVERSING CIRCUIT FOR A WINDOW REGULATOR MOTOR CONTROL SYSTEM

Dale F. Hammer, Bellbrook, Ohio, assignor to General Motors Corporation, Detroit, Mich.

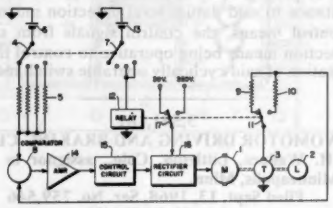
Filed Dec. 15, 1969, Ser. No. 870,628
Int. Cl. H02p *1/22*
U.S. Cl. 318—266 **2 Claims**



A window regulator motor control system for a drive motor operative to open and close a window includes an automatic reversing circuit incorporating an overload current relay and a reversing relay which function to reverse the motor in response to an overload current condition. The reversing relay is energized through a controlled rectifier gated conductive by a triggering circuit including a re-

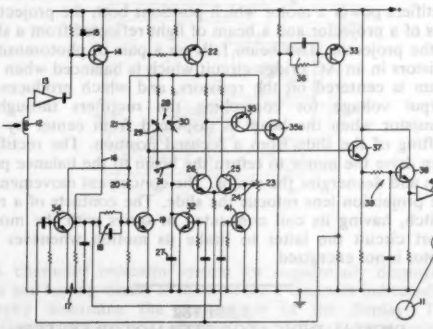
sistance-capacitance time delay network connected to the overload current relay. When the window is driven against an obstruction, the time delay network provides a momentary delay before the controlled rectifier is gated conductive and the motor is reversed.

3,581,175
SPEED CONTROL CIRCUIT WITH TWO VOLTAGE SOURCES TO ENABLE PRECISE SPEED CONTROL OVER A LARGE SPEED RANGE
Manfred Merz, Doernigheim am Main, Germany, assignor to Honeywell G.m.b.H., Frankfurt am Main, Germany
Filed Dec. 4, 1969, Ser. No. 882,199
Claims priority, application Germany, Dec. 7, 1968, P 18 13 384.1
Int. Cl. H02p *5/00*
U.S. Cl. 318—305 **3 Claims**



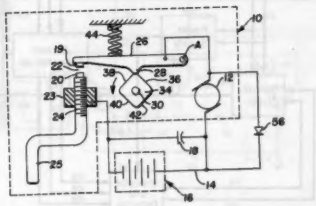
There is disclosed a control system for controlling the speed of the direct current electric motor over a wide range of speeds, for example, a speed range ratio of 1600:1. The speed of the motor is directly controlled by controlling the firing angle of a thyristor bridge network. In order to accomplish a high order accuracy over the very wide range, a voltage of a first magnitude is applied to the thyristor bridge network over a first portion of a range and a voltage of a second magnitude is applied to the thyristor bridge for a second portion of the range.

3,581,176
SYSTEM FOR DRIVING ELECTRIC MOTORS
Geoffrey James Bigg, Cholsey, and Alistair Michael Heaslett, Reading, both of, England, assignors to Ampex Corporation, Redwood City, Calif.
Filed Aug. 19, 1968, Ser. No. 753,418
Int. Cl. H02p *5/16*
U.S. Cl. 318—327 **2 Claims**



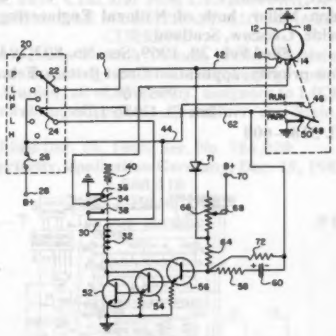
Closed loop servosystem in which an electric motor is driven by or in accordance with signals representing the difference between the actual speed of the motor and a desired nominal speed only if the actual speed is below the nominal speed. The system comprises means for providing trigger signals of a frequency in accord with motor speed, a bistable circuit which when in one state provides an output signal to drive the motor, means responsive to the trigger signals to put the bistable circuit in said one state after a predetermined time has elapsed from receipt of a trigger signal and to switch the bistable circuit to its other state on receipt of each trigger signal.

3,581,177
MOTOR SPEED CONTROL DEVICE
Louis A. Hausknecht, 4504 State Road, Cleveland, Ohio
Filed Oct. 21, 1968, Ser. No. 769,177
Int. Cl. H02p *7/06*
U.S. Cl. 318—330 **16 Claims**



A system for controlling the speed of a direct current motor. The system employs a pair of breaker points for opening and closing the circuit containing the motor. By varying the frequency of contact between the breaker points and the period of time the points are in contact, different pulsations of current are transmitted to the motor to regulate its speed.

3,581,178
WINDSHIELD WIPER CONTROL DEVICE
Robert W. Kearns, 20524 Rutherford, Detroit, Mich.
Filed Apr. 10, 1969, Ser. No. 815,060
Int. Cl. B60s *1/08*
U.S. Cl. 318—443 **10 Claims**

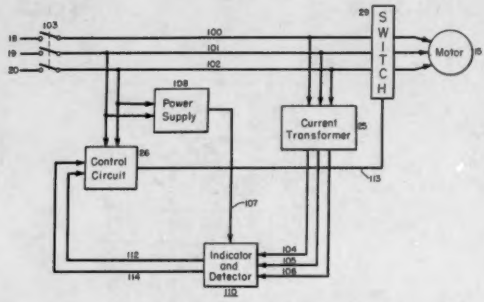


An electric control device controlling a wiper motor to operate windshield wiper blades intermittently with a dwell period between successive wiping cycles. The wiper motor current is carried by relay contacts and a solid state timing circuit controls the energization of the relay coil.

3,581,179
MULTIPHASE MOTOR CONTROL SYSTEM WITH OVERCURRENT AND UNDERCURRENT PROTECTION
Johnny W. Jones, Tulsa, Okla., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Sept. 11, 1969, Ser. No. 857,078
Int. Cl. H02p *3/00*
U.S. Cl. 318—452 **5 Claims**

A multiphase motor control system includes an indicator and detector assembly having a meter relay for each phase circuit. Each meter relay has a pair of light-activated silicon

controlled rectifiers (LASCR's) which are normally conductive when illuminated from a pair of lamps indicating the phase current is below a high level setting, and above a low level setting. If any phase current exceeds the high level setting, the meter movement displaces a shutter which blocks the light from the high-current lamp, deenergizing the LASCR and deenergizing a first control relay, which is coupled to all the high-current circuits, to shut down the system.



Correspondingly, decrease of any phase current below the preset low level causes a reduction of illumination on the low level SCR, and drops out a second control relay, also coupled to the other low-current circuits. The control circuit includes the first and second control relays and associated components for regulating, consonant with suitable time delay, energization and deenergization of the motor. A single power supply energizes the meter relays and the control relays in the control circuit.

3,581,180

HIGH SPEED ABSOLUTE POSITION CONTROLS

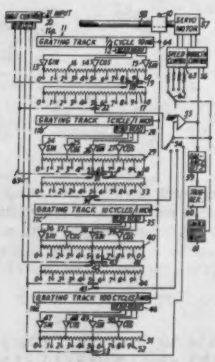
Alexander Russell; ; , and Alastair Gordon Millar, both of National Engineering Lab., East Kilbride, Glascow, Scotland

Filed Feb. 28, 1969, Ser. No. 803,294

Claims priority, application Great Britain, Feb. 29, 1968, 9955/68

Int. Cl. G05b *1/06*

U.S. Cl. 318—608 **14 Claims**



An arrangement for controlling the positioning of a movable object by power drive means along a defined movement path in accordance with an applied digital position command which comprises power drive means operative to cause movement of said object in either direction along said path, electric waveform generating means for generating at least two families of electric waveforms related to the absolute position of said object, each of said families comprising a group of different waveforms which each pass through a chosen datum level of amplitude at different positions of said object along its movement path, the unit distance displacement between adjacent waveforms of one group being an integral multiple of the unit distance displacement of the other family or families, position selection means for selecting under said applied digital position command particular position defining waveforms derived one from each of said families of waveforms, datum level detection means operative to provide a control signal in response to passage of an applied waveform signal through said datum level, servo control means for causing operation of said power drive means in one or other direction in response to an applied error signal and cyclically operable step-by-step switch means for successively applying said selected position defining waveforms in turn and in progressively decreasing order of unit displacement distance to said datum level detection means and said servo control means, the control signals from said datum level detection means being operative to control the step-by-step operation of said cyclically operable switch means.

3,581,181

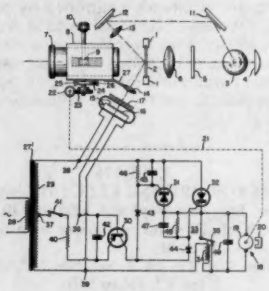
SERVOMOTOR DRIVING AND BRAKING CIRCUIT

Robert H. Wallace, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 13, 1968, Ser. No. 759,546

Int. Cl. G05f *1/00*

U.S. Cl. 318—640 **6 Claims**



Two AC energized back-to-back silicon-controlled rectifiers power a motor which positions both the projection lens of a projector and a beam of light reflected from a slide in the projector. This beam falls on a pair of photosensitive resistors in an AC bridge circuit which is balanced when the beam is centered on the resistors, and which produces an output voltage for controlling the rectifiers through a transistor when the beam is displaced from center by the shifting of the slide from a focused position. The rectifiers then drive the motor to return the beam to the balance position and deenergize the motor. The concurrent movement of the projection lens refocus the slide. The contacts of a reed switch, having its coil connected in series with the motor, short circuit the latter to brake its motion whenever the motor is not energized.

3,581,182

DIGITAL INDICATOR STEP MOTOR SYSTEM

David W. Comstock, Milford, and Edwin R. Campbell, Monroe, both of, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

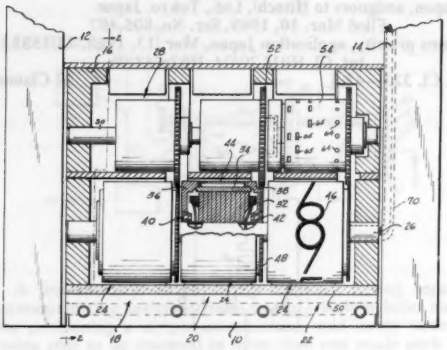
Filed Feb. 8, 1967, Ser. No. 614,679

Int. Cl. G05b *19/40*

U.S. Cl. 318—685 **7 Claims**

A digital indicator system in which a command signal activates a switching network selectively to couple digitally generated, bipolar, phase-displaced signals to the two-phase

internal stator windings of a stepper motor having an outer permanent magnet rotor to cause the rotor always to step in the same direction no matter at what time the switching network is activated by the command signal. The rotor locks magnetically onto the stator poles of one phase when the



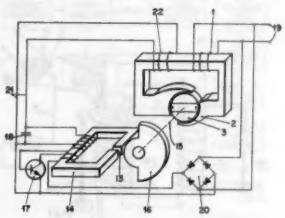
input to the motor disappears. Miniature code drums driven by the stepper motor rotors provide feedback signals which are compared with the command signal to deactivate the switching network when the rotors reach the commanded positions.

3,581,183

CHARACTER INDICATOR WITH MEANS FOR MONITORING THE CORRECT POSITIONING

Gian-Franco Piazza; Rudolf Streit, both of Solothurn, Switzerland; Martin Ulrich, Frankfurt am Main; Werner Laber, Mainflingen; Adolf Burkert; Manfred Tron, Walldorf, and Wolfgang Waluga, Frankfurt am Main all of, Germany, assignors to Autophon Aktiengesellschaft, Solothurn, Switzerland

Filed Feb. 2, 1970, Ser. No. 7,686
Int. Cl. H02k *37/00*
U.S. Cl. 318—696 **27 Claims**



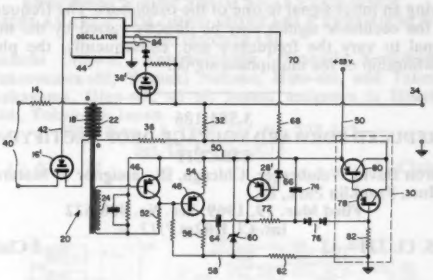
A character indicator system for sequentially displaying data and having means to monitor the characters indicated to thereby determine the correctness of the display. The character carriers are advanced by a step-by-step motor which advances one step for each alternation of the input energy. The monitor means, as a function of the position of the character carrier or the motor armature, affects at least one alternating current signal whose frequency lies within the order of magnitude of several times the frequency of the energy used for driving the motor. Switch means feed the alternating current signal to the motor input where it can be picked up at the other end of the input and used for monitoring purposes.

3,581,184

ISOLATOR FOR DC SIGNAL TRANSMITTER

Edward T. E. Hurd, III, Burlington County, N.J., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 19, 1969, Ser. No. 825,873
Int. Cl. H02m *3/32*; **H03f** *3/38*; **G01r** *19/18*
U.S. Cl. 321—2 **8 Claims**



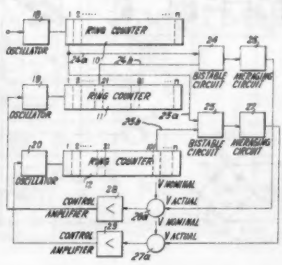
There is disclosed a signal isolator for DC signals which includes a closed-loop, magnetic induction null-balanced output circuit. The DC input signals are chopped and applied as input signals to a first or input winding on a transformer. A sensing winding of the transformer detects the net flux in the transformer core. The signal thereby produced is amplified and converted to a DC output signal. A portion of the output signal is chopped and applied as feedback signal to a third or feedback winding on the transformer. The feedback signal is synchronous with the signal applied to the input winding and is applied to the feedback winding in such a way that the flux produced thereby opposes the flux produced by the signal in the input winding. The sensing winding detects any net flux resultant from the opposed input and feedback signals.

3,581,185

ELECTRIC CIRCUIT FOR GENERATING A PROGRAMMABLE MULTIPHASE ALTERNATING CURRENT

Heinz Hermes; Klaus-Dietrich Thieme, Wedel, Holstein; Willi Gatermann, Hamburg; Peter Koerv, Anzing, and Walter Mehnert, Munich, all of, Germany, assignors to LICENTIA Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Dec. 16, 1968, Ser. No. 784,020
Claims priority, application Germany, Dec. 15, 1967, 1,588,510
Int. Cl. H02m *5/14*
U.S. Cl. 321—7 **9 Claims**



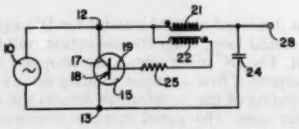
A circuit for producing a multiphase alternating current which may be programmed in wave shape, includes a separate oscillator producing an alternating signal for each phase, a ring counter receiving the output of the oscillator whose stages deliver successive outputs which subdivide a given period, an interrogating switching circuit connected to each output of the ring counter and to a separate bar of a

crossbar distribution panel for receiving a characteristic voltage from that bar and switching it to the input of an amplifier upon receiving a pulse from the associated output of the ring counter. Circuit elements for shifting the phase relationship include a bistable circuit means having a first input connected with one stage of one ring counter and a second input connected to a stage of another ring counter, an averaging circuit for averaging the output signals of the bistable circuit means, and means utilizing the said averaged signals for supplying an input signal to one of the oscillators. The frequency of the oscillator signals may be directly varied by the input signal to vary the frequency and, consequently, the phase relationship of the multiphase signal.

3,581,186
REDUCED FORWARD VOLTAGE DROP RECTIFYING CIRCUIT

Aaron David Weinberger, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 19, 1969, Ser. No. 808,622
Int. Cl. H02m *7/12*
U.S. Cl. 321—43 **5 Claims**

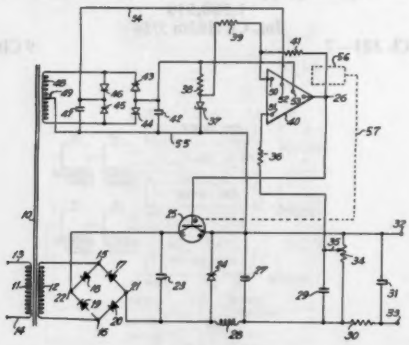


A dynamic rectifying device uses a transistor biased to saturation as the rectifying element. The lower voltage drop between collector and emitter of a saturated transistor (as compared with the diode voltage drop) provides increased rectifying efficiency and better clamping action. The circuit includes a bias network using the input alternating current signal to develop the proper bias voltage for the circuit.

3,581,187
REGULATED DC POWER SUPPLY

Charles B. Grady, Jr., West Orange, N.J., assignor to The Metrodynamics Corporation, Carlstadt, N.J.

Filed June 23, 1969, Ser. No. 835,717
Int. Cl. G05f *1/58, 1/64*
U.S. Cl. 323—17 **8 Claims**

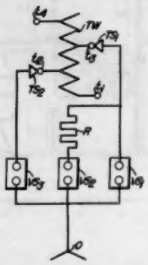


A regulated DC power supply wherein the main pass transistor is connected to an operational amplifier having a positive feedback which rapidly switches the main pass transistor on and off, rather than maintaining transistor continuously on, so as to intermittently supply DC power from a rectified source to the output of the supply while maintaining the voltage of the output within predetermined limits of voltage regulation for various loads and line current fluctuations. By rapidly switching the main pass transistor, it is possible to significantly reduce its heat dissipation and therefore reduce the size and cost of the power supply.

3,581,188
SWITCHING DEVICE FOR ON-LOAD TAP CHANGERS OF REGULATING TRANSFORMERS

Ryozi Watanabe, and Yutaka Kobayashi, both of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 10, 1969, Ser. No. 805,487
Claims priority, application Japan, Mar. 13, 1968, 43/15853
Int. Cl. H01f *29/04;* H02p *13/06*
U.S. Cl. 323—43.5 **22 Claims**

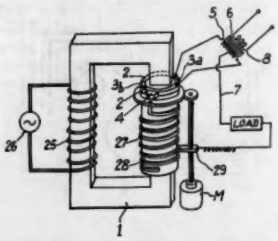


A switching device for an onload tap changer of a regulating transformer, in which use is made, instead of contacts, of vacuum switches operable without generating an arc exteriorly, the said vacuum switches being arranged along the sides of a polygonal shape in such a manner that those vacuum switches which are operated in the same switching sequence are located in a group on one and the same side of the said polygonal shape, and operated for opening and closing actions in accordance with the switching sequence from a drive shaft through a link mechanism provided for each group, whereby maintenance of the switching device is facilitated and the operation of the vacuum switches can be controlled easily.

3,581,189
ON-LOAD VOLTAGE REGULATORS

Maurice Sinet, 45 Blvd. Stalingrad 92, Antony, France

Filed July 2, 1969, Ser. No. 838,615
Claims priority, application France, July 3, 1968, 157,661
Int. Cl. H01f *29/04;* H02p *13/06*
U.S. Cl. 323—43.5R **6 Claims**

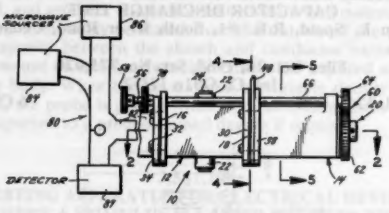


An on-load voltage regulator comprises a transformer having a magnetic core, a primary winding on the core, and a rotatable secondary winding in the form of a bare wire conductor coiled helically around the core. A brush cooperates with the second winding and is movable axially but not angularly relative to the secondary winding. A slip ring connector at one end of the secondary winding has fixed elements and an element which bridges the fixed elements and which is connected to the end of the secondary winding and is rotatable therewith. An inverse potential is applied between the fixed elements for the purpose of maintaining the potential between the fixed elements at a zero value in use when they are bridged by the rotatable element of the slip ring connector.

3,581,190
MICROWAVE RESONANCE SYSTEMS EMPLOYING A BIMODAL CAVITY

Ian McLaren Brown, St. Louis, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Sept. 17, 1968, Ser. No. 760,234
Int. Cl. G01n 27/78
U.S. Cl. 324—0.5 20 Claims

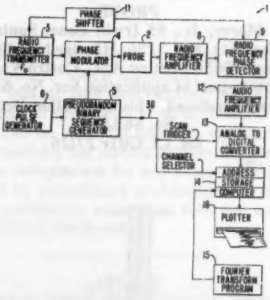


A bimodal microwave cavity structure having separate communicating cavity portions, one of which includes means for positioning a sample or specimen, said cavity structure being able to be resonant in more than one mode such that the sample or specimen when positioned at a suitable location in one of the structure cavities can interact with the fields associated with all modes that are present. The present structure is a relatively simple inexpensive device which can be used to gather information and particularly information from which relatively complex characteristics of specimen substances can be determined. The present structure can also be used in the construction of two level maser devices as well as in other devices.

3,581,191
PHASE CORRELATION FOR AN RF SPECTROMETER EMPLOYING AN RF CARRIER MODULATED BY A PSEUDORANDOM SEQUENCE

Weston A. Anderson, Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Aug. 6, 1969, Ser. No. 847,859
Int. Cl. G01n 27/78
U.S. Cl. 324—0.5 11 Claims

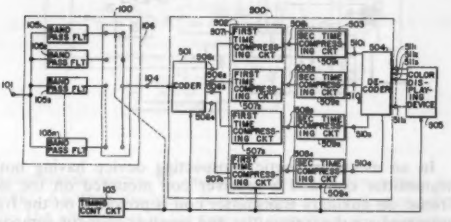


The radio frequency spectrometer is disclosed employing a radio frequency transmitter which transmits a wide band of energy to the sample for simultaneously exciting radio frequency resonance of different spectral lines of the sample. The wide band transmitter energy is generated by a radio frequency carrier which is modulated by a pseudorandom binary sequence to produce the wide bandwidth for exciting the sample. The pseudorandom binary sequence is repetitive and the excited composite resonance signal is repetitively time scanned and sampled at a multiplicity of intervals during each scan. The sampled data derived from repetitive scans are digitized and sequentially stored and added in their respective channels of a storage unit to produce a time average for improving the signal noise ration. The pseudorandom binary sequence is synchronized with the time scan of the composite resonance signal to preserve the phase relation between successively sampled and stored data from successive scans, whereby either pure absorption or pure dispersion mode resonance data is obtained.

3,581,192
FREQUENCY SPECTRUM ANALYZER WITH DISPLAYABLE COLORED SHIFTABLE FREQUENCY SPECTROGRAM

Tanetoshi Miura, Kokubunji-shi; Tsuneji Koshikawa, Tokorozawa-shi; Yasuaki Nakano, Hino-shi, and Takeshi Nakayama, Hino-shi, all of, Japan, assignors to Hitachi, Ltd., Tokyo-To, Japan

Filed Nov. 13, 1968, Ser. No. 775,343
Int. Cl. G01r 23/16
U.S. Cl. 324—77 11 Claims

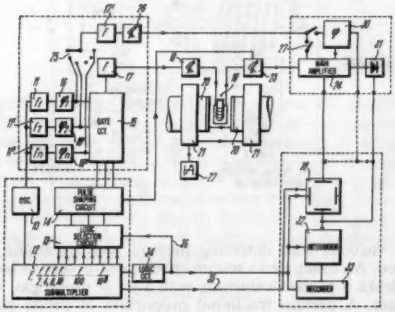


Sound signal is analyzed so that there are provided a plurality of different constituent frequency components by means of a set of band-pass filters, and the thus analyzed frequency components are time-sequentially supplied to a color display which employs a color picture tube and its associate circuits for displaying different colors representative of the intensities of the frequency components.

3,581,193
PULSE SPECTROMETER EMPLOYING SEQUENCES OF SYNCHRONIZED MODULATED PULSES

Gunther R. Laukien, Forchheim Karlsruhe, Germany

Filed Nov. 4, 1968, Ser. No. 772,979
Claims priority, application Germany, Nov. 2, 1967, B952101
Int. Cl. G01n 27/78
U.S. Cl. 324—0.5 15 Claims



Pulse spectrometer, preferably for measurement of nuclear resonance of a material, having one or many high frequency measuring channels or having variable high frequency measuring ranges, characterized in that all pulse spacing periods within the pulse measuring programs and the HF carrier frequency of the HF pulses employed are derived from a common source of high frequency oscillations, so that the

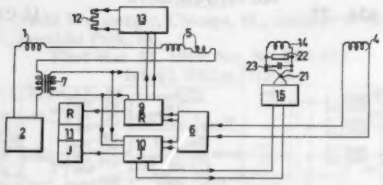
pulses commence only at specific, i.e. statistically nonfluctuating, phase values of the HF carrier frequency.

3,581,194

TEMPERATURE RESPONSIVE MEANS FOR AUTOMATICALLY CORRECTING VARIATIONS IN THE COMPENSATION OF AN ELECTROMAGNETIC PROSPECTING DEVICE

Ruben Tegholm, Johanneshov, Sweden, assignor to Atlas Copco Aktiebolog, Nacka, Sweden

Filed Feb. 4, 1969, Ser. No. 796,399
Claims priority, application Sweden, Feb. 6, 1968, 1568/68
Int. Cl. G01v *3/12, 3/16*
U.S. Cl. 324—6 **6 Claims**



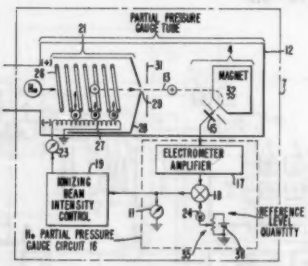
In an electromagnetic prospecting device having both a transmitter coil and a receiver coil mounted on the same frame, an auxiliary transmitter coil is provided on the frame intermediate the transmitter and receiver coils for compensation of the influence of the primary field, generated by the transmitter, on the receiver, there also being means for automatically correcting variations in the compensation due to changes in the distance between the transmitter and receiver coils caused by fluctuations in temperature and forces to which the device is exposed.

3,581,195

DETECTION OF VACUUM LEAKS BY GAS IONIZATION METHOD AND APPARATUS PROVIDING DECREASED VACUUM RECOVERY TIME

Robert L. Jepsen, Los Altos, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed June 10, 1968, Ser. No. 735,695
Int. Cl. G01n *27/62*
U.S. Cl. 324—33 **6 Claims**



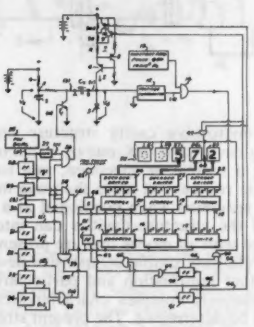
A vacuum leak detecting method and apparatus is disclosed. An evacuated vacuum envelope structure to be tested for leaks is probed exteriorly with a jet of probe gas, such as helium. A certain fractional proportion of probe gas constituent which leaks through the probed vacuum envelope structure is ionized by a leak detector apparatus connected in gas communication with the structure being tested. The ionized probe gas constituent is collected to produce an ion current signal. The ion current signal is monitored to obtain a measure of the partial pressure of the probe gas constituent for detecting leaks. The fractional proportion of the probe gas which is ionized is varied inversely with the partial pressure of the probe gas constituent, whereby reemission of ionically pumped gas within the pressure measuring system is minimized, in use, to decrease the recovery time of the leak detector in its high sensitivity range. In one embodiment of the present invention, a comparator circuit is provided for comparing the amplitude of the ion current signal with a reference signal to derive a control signal for controlling the intensity of a ionizing bema of electrons utilized to ionize the probe gas constituent.

3,581,196

DIGITAL CAPACITANCE METER BY MEASURING CAPACITOR DISCHARGE TIME

William L. Spaid, R.R. #1, South River Road, Cedarville, Ohio

Filed Oct. 28, 1968, Ser. No. 771,026
Int. Cl. G01n *11/52*
U.S. Cl. 324—60R **6 Claims**



A fully automatic capacitance meter with decimal readout. The meter operates cyclically at a relatively high frequency, acting in an initial small fraction of each cycle to charge the unknown capacitor to a predetermined voltage, discharge the capacitor at a constant rate to zero voltage, measure the time interval required for discharge to produce a time analog of the capacitance, and convert the time analog to a decimal number. The remaining large fraction of each cycle is used to display the decimal number. Automatic range switching is accomplished by changing the discharge rate.

3,581,197

CAPACITANCE MOISTURE METER AND WINGLIKE PROBE

Dennison H. Morey, Jr., 55 Irwin Lane, Santa Rosa, Calif.; Melvin Silva, P.O. Box 3276, Hayward, Calif., and Gordon D. Browning, 19056 Stanton Ave., Castro Valley, Calif.

Continuation-in-part of application Ser. No. 664,112, Aug. 29, 1967, now abandoned. This application Oct. 3, 1969, Ser. No. 863,665
Int. Cl. G01r *27/26*
U.S. Cl. 324—61 **5 Claims**

Free moisture in yieldable matter (defined to include water, alcohols, and other liquids of relatively high dielectric

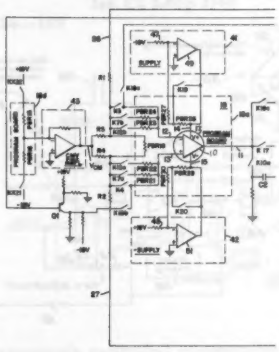
constants occurring on the surface of solids or as drops in another liquid) is measured by an instrument which includes a radio frequency oscillator (e.g., 2 MegHz.), preferably voltage-stabilized, connected to an LC circuit that can be made substantially resonant, one of the elements being a capacitance probe, and the potential over one of these elements is measured to indicate the moisture content. The probe preferably includes an outer sheath of metal which partly covers a body of moisture-impermeable dielectric material and leaves a part of the surface of the material exposed, and an inner conductor embedded in the material and thereby completely insulated from the outside of the probe; the capacity between the sheath and conductor varies with the amount of moisture which contacts the exposed surface of the body. When testing material of variable density, such as soil, the probe is placed within the material and the latter is compacted to a predetermined degree if required.

3,581,198

TESTING APPARATUS FOR ELECTRICAL DEVICE WHERE A STIMULUS IS VARIED BETWEEN TWO STATES

William E. Shoemaker, Los Altos, and David W. Wilson, Sunnyvale, both of, Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Jan. 8, 1969, Ser. No. 789,721
Int. Cl. G01r *15/12*
U.S. Cl. 324—73 **13 Claims**



Testing apparatus for testing electrical devices such as operational amplifiers which sequences through a series of tests each test having first and second test halves during which a parameter of the device is varied between two states. The apparatus can be used for pass-fail testing of electrical devices or alternatively for sorting by selective display of the quantitative test information for any desired parameter. This is accomplished by providing a pushbutton for each test; by depressing the pushbutton associated with the test the quantitative information is displayed.

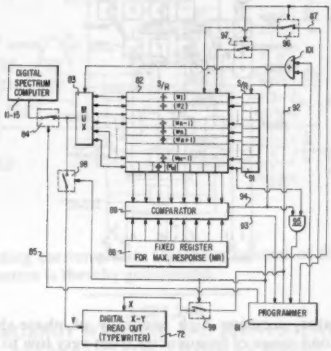
3,581,199

SPECTRUM ANALYZER INCLUDING SAMPLING AND SCALING MEANS

David A. Spitz, Columbus, Ohio, assignor to Industrial Nucleonics Corporation

Filed Sept. 1, 1967, Ser. No. 665,135
Int. Cl. G01n *23/16*
U.S. Cl. 324—77 **35 Claims**

Disclosed is a digital spectrum analyzer wherein the spectral content at a plurality of frequencies w_m is computed in response to Fourier transforms at each frequency of an analyzed signal at a plurality of discrete time intervals. The Fourier transforms over each interval are combined to indicate the Fourier transform over the entire interval being considered. A further disclosed feature relates to determining with a specific degree of certainty whether a frequency component is periodic. The determination is made by multiplying average power spectrum density over all the frequencies by a predetermined factor, dependent upon the degree of certainty desired. If the spectral density at a particular frequency is greater than the product, it can be assumed, with the



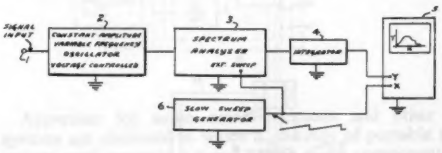
predetermined degree of certainty, that the frequency is periodic. Another disclosed feature concerns automatically scaling the amplitudes of the spectral responses at a plurality of predetermined frequencies, whereby no off-scale readings are obtained.

3,581,200

APPARATUS FOR DERIVING THE PROBABILITY DENSITY FUNCTION OF A SIGNAL WITH RESPECT TO AMPLITUDE

Ralph W. Mifflin, R. D. 4, Rome, N.Y.

Continuation-in-part of application Ser. No. 531,649, Feb. 25, 1966. This application Feb. 18, 1969, Ser. No. 800,239
Int. Cl. G01r *23/16*
U.S. Cl. 324—77R **2 Claims**



The probability density function of a signal the amplitude of which is the variate is derived by first producing a constant amplitude FM wave the instantaneous frequency of which is linearly related to the instantaneous amplitude of the signal. A spectrum analyzer and integrator are then used to derive the energy-frequency distribution of the FM wave. This distribution is the probability density function of the signal and is displayed on a suitable X-Y display device synchronized with the spectrum analyzer sweep.

3,581,201

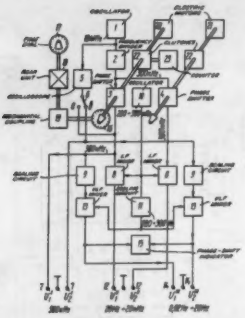
PHASE-SETTING DEVICE

Svyatoslav Anatolievich Kravchenko, Kirovsky Prospekt,65,kv.29, and Alexei Alexeevich Kulemin, Kubinskaya ul.,28,kv.33, both of Leningrad, U.S.S.R.

Filed May 7, 1969, Ser. No. 822,407
Int. Cl. G01r *25/00*
U.S. Cl. 324—83 **4 Claims**

A phase-setting device for very low, low and high frequen-

cies, comprising phase-shifters, scaling circuits, very low frequency and low frequency mixers, and a variable-frequency oscillator, securing high accuracy of phase-shift setting over a broad range of frequencies from very low to high.

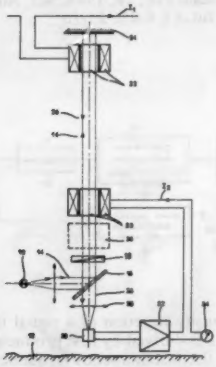


3,581,202

DEVICES FOR THE ELECTRO-OPTICAL MEASUREMENT OF AN ELECTRICAL QUANTITY

Yves J. Pelenc, La Tronche, and Georges M. Bernard, Saint Egreve, both of, France, assignors to Merlin Gerin, Societe Anonyme,, Grenoble, France

Filed Aug. 15, 1968, Ser. No. 752,927
Claims priority, application France, Sept. 1, 1967, 119,802
Int. Cl. G01r *19/08*
U.S. Cl. 324—96 **3 Claims**



Electro-optical measuring device for high-voltage overhead lines wherein a light beam is directed to the line and reflected to the earth surface and whereby both the upwardly directed light beam and the reflected light beam follow the same path and traverse the same measuring devices.

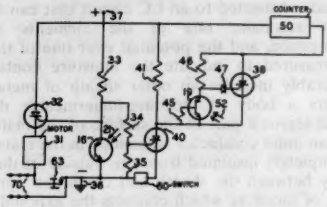
3,581,203

ANALOG METER HAVING MEANS TO PROVIDE A DIGITAL READING OF THE POINTER POSITION

William Flower, 5127 Estes Ave., Skokie, Ill.

Filed Jan. 2, 1969, Ser. No. 789,099
Int. Cl. G01r *31/00, 19/26*
U.S. Cl. 324—96 **8 Claims**

The invention disclosed within this specification pertains particularly to an instrument for digitalizing the output of an analogue device by following a meter movement and counting the meter indications from a given point down to zero.

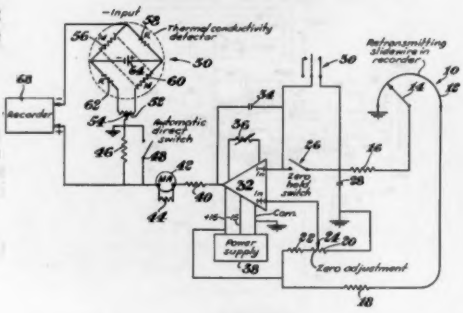


3,581,204

ELECTROMECHANICAL RECORDER AUTOMATIC ZERO APPARATUS

Fred D. Martin, Angleton, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 14, 1969, Ser. No. 815,865
Int. Cl. G01r *1/02, 13/04*
U.S. Cl. 324—130 **5 Claims**



This invention relates to means for providing an automatic zero to correct periodically for instrument drift to precisely the same point each time after such drift occurred. The automatic zero means of this invention senses the position of a recorder pen and corrects the incoming signal to move the pen to a definite position. Variations that may be encountered in an electronic zero or signal condition feeding the recorder are zeroed out with the signal drift in order to position the recorder pen at a specified point.

3,581,205

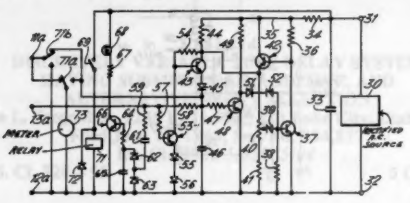
APPARATUS FOR TESTING SWITCHING TYPE VOLTAGE REGULATORS BY COUNTING SQUARE WAVE PULSES PRODUCED BY THE REGULATOR

Raymond Michael Christopher Wilson, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 25, 1969, Ser. No. 810,110
Claims priority, application Great Britain, Jan. 15, 1969, 2396/69
Int. Cl. G01r *31/28, 15/12*
U.S. Cl. 324—158 **1 Claim**

In the testing of a voltage regulator of the kind in which the regulator provides an output voltage of square wave form to a field winding, a signal is injected into the regulator representing the signal which the regulator will receive in use from a generator. The output from the regulator, which will

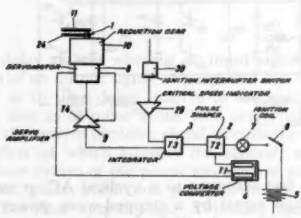
be of square waveform, is then fed to a counter, and an indication that the regulator is working satisfactorily is given when a predetermined number of square waves have been counted.



3,581,206
ELECTRONICALLY CONTROLLED SPEEDOMETER WITH MAXIMUM SPEED INDICATOR

Siegfried Strohm, Stuttgart-Stammheim, Germany, assignor to Firma Dr.-Ing. h.c. F. Porsche RG, Stuttgart/Zuffenhausen, Germany

Filed Apr. 3, 1969, Ser. No. 813,036
Claims priority, application Germany, Apr. 6, 1968, P 17 73 152.1
Int. Cl. G01p 3/48
U.S. Cl. 324—169 **5 Claims**



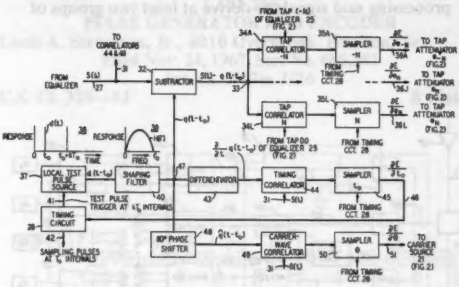
An electronically controlled speedometer wherein the inductive impulses from the ignition coil whose frequency is proportional to the speed of the motor are shaped and integrated to form a control signal which is applied to a servoamplifier connected to a servomotor forming a servo loop, the servomotor driving the instantaneous speed indicator dial which in turn drags a maximum speed dial therewith in the direction of increasing speed indication, and a critical speed indicator responsive to a critical value of said control signal for interrupting the ignition circuit.

3,581,207
JOINT SETTING OF DEMODULATING CARRIER PHASE, SAMPLING TIME AND EQUALIZER GAIN PARAMETERS IN SYNCHRONOUS DATA TRANSMISSION SYSTEMS

Robert W. Chang, 82 Southview Terrace North, Middletown, N.J.

Filed Aug. 6, 1969, Ser. No. 847,881
Int. Cl. H04b 1/00
U.S. Cl. 325—42 **10 Claims**

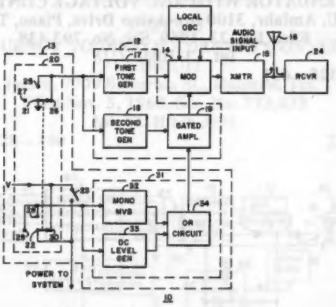
Apparatus and method for the joint setting in synchronous digital data transmission systems of the parameters of demodulating carrier phase, sampling time and transversal equalizer tap gains based on a common mean-square error minimization criterion. Responsive to test pulses traversing a distorting transmission medium and locally generated test pulses traversing an ideal filter simultaneous correlations are made with each equalizer tap output and the error difference between actual and ideal responses to control gap tap gains, with the derivative of the ideal response and the received signal to control sampling time, and with a quadrature transform of the received signal and the ideal response to control demodulating carrier phase. Optimum control of these critical parameters is thereby guaranteed.



3,581,208
EMERGENCY WARNING AND IDENTIFICATION APPARATUS FOR TWO-WAY RADIO COMMUNICATION SYSTEM

William Buehrle, Jr., 333 Maplewood Road, Huntington Station, N.Y., and Gerald F. Woodard, 8 Lakeside Drive, Centerport, both of, N.Y.

Filed Dec. 16, 1968, Ser. No. 784,034
Int. Cl. H04b 7/00
U.S. Cl. 325—64 **5 Claims**



Apparatus for audio communications and other such systems are disclosed in which a plurality of portable transceivers each generate a signal having audio components and a unique combination of continuous wave frequency components, for transmission to a remote station. Manual operation of a multiposition switch in each transceiver permits indicating the existence of an emergency or nonemergency transmit condition by controlling the duration of one of the continuous wave frequency components. The transmitted signal is received at the remote station where circuitry filters and detects the unique combination of continuous wave frequency components to identify the transceiver and also determines the duration of the controllable duration component to indicate the particular transceiver's condition. Other embodiments are also covered.

3,581,209
CABLE TELEVISION PROGRAM CAPACITY ENHANCEMENT

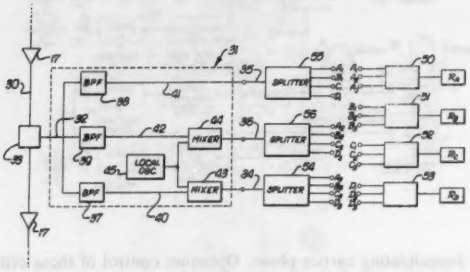
Arie Zimmerman, 3511 W. 6th St., Los Angeles, Calif.; James A. Kuksch, 9104 Lantern Lane, and Gerald D. Smith, 6207 Breamore Rd., both of Indianapolis, Ind.

Filed Sept. 17, 1968, Ser. No. 760,158
Int. Cl. H04h 1/04; H04n 7/10
U.S. Cl. 325—308 **18 Claims**

The invention concerns a system wherein a distribution cable is operable to transmit TV signals to TV receivers each

having a limited number of local channels, the method of the invention enabling selective reception on said channels of cable distributed programs the number of which exceeds the number of said local channels, the method including,

processing said signals to derive at least two groups of



resultant signals characterized in that the resultant signals of each group have carrier frequencies corresponding to those characteristic of said local channels,

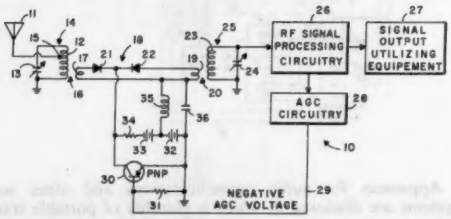
and selectively and individually connecting said resultant groups of signals with the input to a TV receiver.

3,581,210

RF T-PAD LOW IMPEDANCE COUPLING CIRCUIT ATTENUATOR WITH AGC VOLTAGE CONTROL

Warren U. Amfahr, 3100 Brookview Drive, Plano, Tex.

Filed Jan. 23, 1969, Ser. No. 793,438
Int. Cl. H04b *1/18*
U.S. Cl. 325—411 **9 Claims**



An RF signal path variable attenuation circuit with common electrode connected diodes in the signal path and the diode interconnection connected through a transistor to ground. A voltage diode biasing circuit is also so connected in the circuit that the degree of voltage bias to conduction of the diodes is subject to variation through variable DC drain from the diode junction through the transistor along with, simultaneously, variable RF signal diversion to ground as controlled by AGC voltage variations applied at the transistor base.

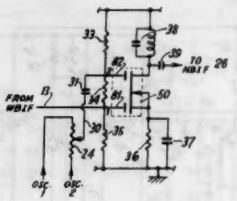
3,581,211

SYSTEM FOR SIMULTANEOUS RECEPTION OF MULTIPLE SIGNALS

Peter Maitland, and Richard W. Ehrhorn, both of Electronic Communications, Inc. P.O. Box 12248, St. Petersburg, Fla.

Filed Dec. 24, 1968, Ser. No. 786,675
Int. Cl. H04b *1/26*
U.S. Cl. 325—451 **9 Claims**

In this invention, two RF signals of different carrier frequencies and having different amplitude characteristics are received and the information content of each is used simultaneously. For example, when the RF signals carry different audio signals, this invention allows simultaneous listen-



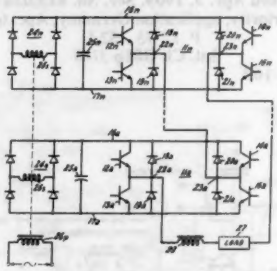
ing by developing output signals of substantially equal magnitude.

3,581,212

FAST RESPONSE STEPPED-WAVE SWITCHING POWER CONVERTER CIRCUIT

William McMurray, Schenectady, N.Y., assignor to General Electric Company

Filed July 31, 1969, Ser. No. 846,354
Int. Cl. H03b *7/14*
U.S. Cl. 328—14 **18 Claims**



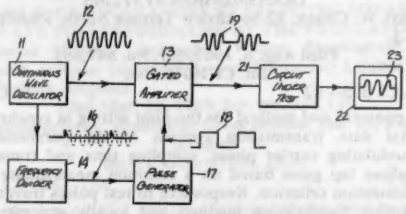
To obtain fast response to a cyclical AC or variable DC input reference signal by a stepped-wave power converter circuit comprising a plurality of equal or unequal inverter modules connected in series or parallel so that the module output voltages add algebraically, the composite instantaneous output stepped-wave voltage is compared with the instantaneous voltage values of the limits of a control band placed about the reference signal. One or more inverter modules are switched to produce a step change whenever the composite output voltage is outside the control band limits. An application is a fast response switching power amplifier for driving sonar transducers.

3,581,213

SYNCHRONIZED BURST GENERATOR

Elmo E. Crump, 63 Grover Lane, West Caldwell, N.J.

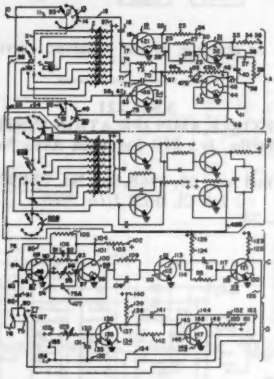
Filed May 9, 1968, Ser. No. 727,857
Int. Cl. H03b *19/00*
U.S. Cl. 328—25 **4 Claims**



A burst generator including a continuous wave oscillator, means to synchronize a pulse generator to the oscillator so

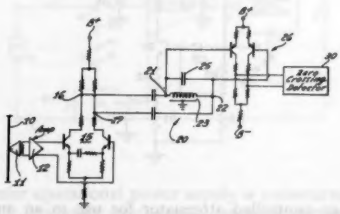
that each pulse starts at a corresponding point on a cycle of the continuous wave, and a gating circuit actuated by the pulses to transmit repetitive bursts of oscillations, each starting at a corresponding point of a cycle.

3,581,214
DISCRETELY VARIABLE TIME DELAY SYSTEM HAVING SUBMULTIPLE, ADDITIVE, AND ALTERNATIVE DELAY SELECTION
Ben L. Seegmiller, 2235 E. 21st St., Salt Lake City, Utah
Filed June 19, 1969, Ser. No. 834,817
Int. Cl. H03k *5/159, 5/04*
U.S. Cl. 328—55 **5 Claims**



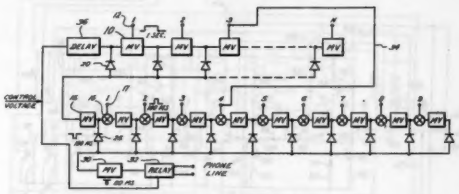
A time-delay system wherein an input signal triggers the generation of an output signal or pulse that can be accurately controlled as to time delay relative to the input signal, and preferably also as to pulse width. In a preferred form of the invention, the system includes plural circuits the delayed output of a first of which triggers the second, and so forth. Selected time delays of the plural circuits are additive, when desired, and pulse width and polarity are to be predetermined in the final output stage. Switching means are provided to connect in desired fashion one or more selected circuits to the output of the system, and one-shot multivibrators and pulse shaping stages are preferably used in each circuit. Precision resistance-capacitance circuits preferably assist to provide a stepped sequence of time delays as to each respective circuit, and the sequence of respective circuits are preferably related in a submultiple, time-delay relationship.

3,581,215
VARIABLE FREQUENCY DELAY LINE DIFFERENTIATOR
Forrest C. Meyer, San Diego, Calif., assignor to Systems Peripherals Division, San Diego, Calif.
Filed May 22, 1969, Ser. No. 826,839
Int. Cl. H03k *5/159*
U.S. Cl. 328—56 **10 Claims**



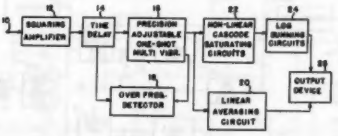
A circuit for processing a transducer readout signal is disclosed in which a frequency dependent variable length delay line is connected across a double ended output of a signal amplifier.

3,581,216
PULSE GENERATOR AND ENCODER
Louis A. Stevenson, Jr., 4010 Overbrook, Houston, Tex.
Filed Nov. 24, 1967, Ser. No. 685,391
Int. Cl. H03m *1/26*
U.S. Cl. 328—61 **8 Claims**



A pulse generating circuit particularly useful as an encoder for automatic electronic dialing equipment including a plurality of serially connected first monostable circuits, a plurality of serially connected second monostable circuits with gate means connected therebetween, means connecting each of said first monostable circuits to the first circuit of said second monostable circuit, means for connecting each said first monostable circuits to a control terminal of said gate means, and means connected with each of said second monostable circuits for receiving a pulse train. Each of the first monostable circuits may correspond to a digit of a plural digit number, and each of the second monostable circuits may correspond to a value of each digit.

3,581,217
FREQUENCY TO DIRECT CURRENT CONVERTER CIRCUIT
Wayne R. Isaacs, 7709 Suburbia St., Houston, Tex.
Filed Nov. 5, 1968, Ser. No. 773,433
Int. Cl. H03b *3/04*
U.S. Cl. 328—140 **22 Claims**

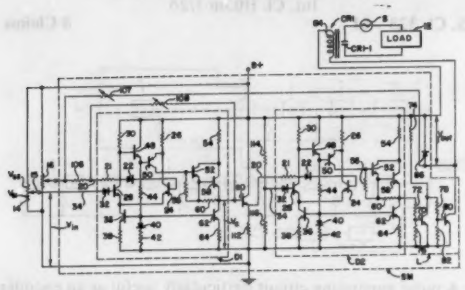


A system is disclosed for converting a periodic signal into a direct current signal that is proportional to and/or a predetermined nonlinear function of the frequency of the periodic signals. The input signals are converted into pulse type signals having a constant amplitude and preset time duration. These pulse type signals are applied to an averaging circuit for providing a direct current output proportional to the frequency and/or to a saturable circuit for providing a direct current signal that is a nonlinear function of the applied frequency. A circuit is included to determine when input frequency has a period shorter than the pulse type signals.

3,581,218
SMOOTHLY ACTING SIGNAL COMPARATOR
Bill J. Ransdell, 1915 24th St., Moline, Ill.
Filed Aug. 26, 1968, Ser. No. 755,319
Int. Cl. G06g *7/14;* **H03b** *3/02;* **H03k** *5/20*
U.S. Cl. 328—146 **7 Claims**

There is provided a signal monitoring circuit, for use with a signal source having a high internal impedance, for providing an output signal when a received input signal attains a predetermined value relative to a comparison signal, including means for developing the comparison signal; and, bistable circuit means having an input circuit for receiving the input signal, and an output circuit. The bistable circuit means being normally in a first condition and being actuated to a second condition when the input signal attains the predeter-

mined value relative to the comparison signal, whereupon the output circuit carries an output signal. The signal monitoring circuit includes an improvement for positively actuating the bistable circuit from the first condition to the second condition so that the output signal is characterized by substantially continuously varying from a first level to a second level,



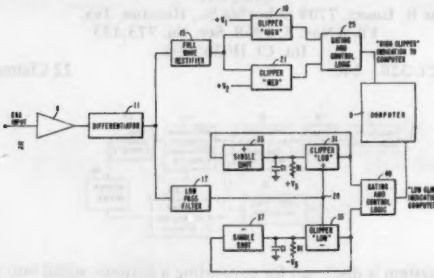
wherein the improvement comprises circuit means coupling the output circuit to the comparison signal developing means for varying the value of the comparison signal in dependence upon the value of the output signal so as to increase the actuation time required to place the bistable means in the second condition.

3,581,219

SYSTEM FOR DYNAMICALLY ADJUSTING CLIPPING IN EDITING ELECTROCARDIOGRAM WAVES

David C. Alexander, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 24, 1967, Ser. No. 677,685
Int. Cl. H03k 5/08
U.S. Cl. 328—168 4 Claims



The disclosure sets forth a feedback system for dynamically adjusting the clipping levels in electrocardiogram analyses. The input-analog data is used to control the sampling rate in such a manner that only enough samples, including all significant deviations, are taken to describe the wave adequately. This makes it unnecessary to take a very large number of samples on a noisy record while it avoids missing important points.

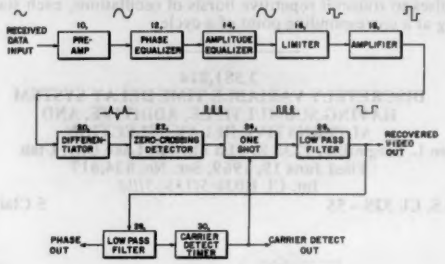
3,581,220

FREQUENCY MODULATION SIGNAL DEMODULATOR

Allan J. Bell, 18 Old Post Road, Fairport, N.Y., and Roger B. Stone, 4207 Marble Lane, Fairfax, Va.

Filed Feb. 17, 1969, Ser. No. 799,855
Int. Cl. H04l 27/14
U.S. Cl. 329—126 8 Claims

In a data communication system a demodulator for use in detecting data information carried in a frequency modulated signal. A signal which had been modulated between upper and lower limits of frequency, in addition to other frequencies within or without the said limits for supervisory functions, would be received and by means of equalizers, a limiter, zero crossing detector, Schmitt trigger, and a low pass filter, the original data can be recovered from the received frequency modulated signal. Further, circuits are provided for providing phasing information and for detecting



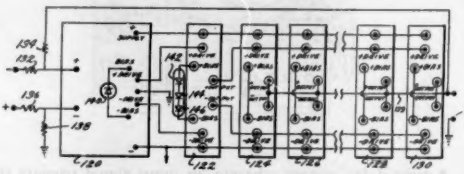
the presence or absence of the received carrier frequency signal.

3,581,221

FLEXIBLE AMPLIFICATION SYSTEM

Edward J. Martin, Jr., 219 Ferguson Ave., Newport News, Va.

Filed Apr. 29, 1968, Ser. No. 724,974
Int. Cl. H03f 3/16, 3/18
U.S. Cl. 330—24 10 Claims



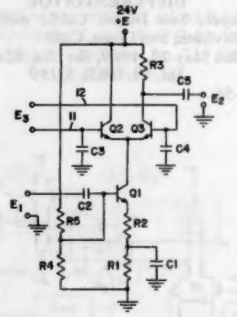
A flexible and expandable system comprising a number of modules from which a composite power amplifier of any given output capability can be constructed. An operational amplifier can be constructed from a driver module performing the voltage gain function and a number of booster modules connected to it furnishing the output power capability.

3,581,222

LINEAR VOLTAGE CONTROLLED ATTENUATOR

Duane E. Dunwoodie, Los Altos, Calif., assignor to Wilton Company, Palo Alto, Calif.

Filed Mar. 19, 1969, Ser. No. 808,471
Int. Cl. H03g 3/30
U.S. Cl. 330—29 8 Claims



A voltage controlled attenuator for use in an automatic gain control circuit. The attenuator includes a first transistor having a relatively high output impedance driven by an AC input signal. Its collector output is coupled to the coupled

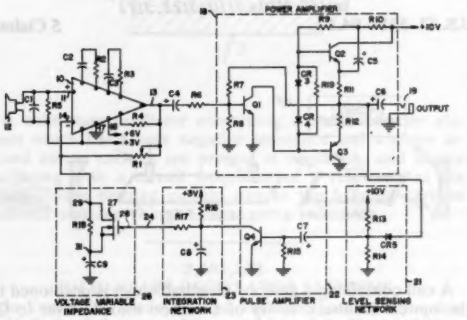
emitter inputs of two common base connected amplifiers which are differentially driven by a control signal to split the output current of the first transistor between them. The output voltage which is attenuated in proportion to the control signal is then taken from the collector of one of the common base amplifiers.

3,581,223

FAST RESPONSE DYNAMIC GAIN CONTROL CIRCUIT

Merritt S. Armstrong, San Francisco, Calif., assignor to HC Electronics, Inc., Tiburon, Calif.

Filed Apr. 30, 1969, Ser. No. 820,542
Int. Cl. H03g 3/30
U.S. Cl. 330—29 4 Claims



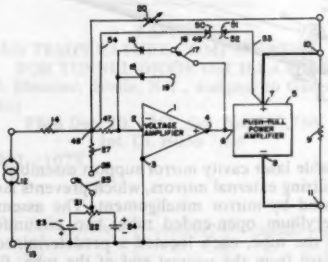
A dynamic gain control circuit for audio frequencies includes an audio amplifier of the operational type having an inverse feedback network including a threshold level sensing network providing a control voltage when the amplified output signal exceeds a predetermined level. The control voltage is coupled to the input of an insulated gate field effect transistor whose impedance is varied to control the amplification of the operational amplifier.

3,581,224

BIPOLAR OPERATIONAL POWER SUPPLY

Sarkis Nercessian, Long Island City, N.Y., assignor to Forbro Design Corp., New York, N.Y.

Filed Dec. 30, 1968, Ser. No. 796,262
Int. Cl. H03f 1/34
U.S. Cl. 330—99 7 Claims



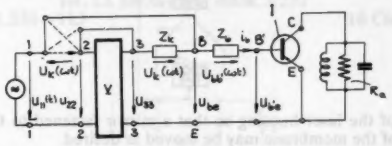
A bipolar operational power supply is constructed to provide stable operation over a wide range of gain settings including zero and with various load conditions in order to provide power output with AC or DC control or combinations of the two and in either voltage or current modes.

3,581,225

TRANSISTORIZED POWER AMPLIFIER

Horst Rothe, Geigersbergstrasse 17, 7500 Karlsruhe-Durlach, Germany

Filed Oct. 3, 1968, Ser. No. 764,755
Claims priority, application Germany, Oct. 4, 1967, P 15 37 653.1
Int. Cl. H03f 1/08
U.S. Cl. 330—28 8 Claims



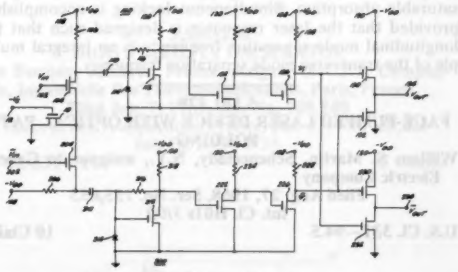
A transistor power amplifier whose high frequency power conversion efficiency is improved by the application of an input alternating control voltage whose waveform is adjusted to compensate for the voltage drops due to current flow between the transistor base-emitter junction and both the base terminal and the collector terminal of the transistor so as to impart the desired waveform to the output current at the transistor collector terminal.

3,581,226

DIFFERENTIAL AMPLIFIER CIRCUIT USING FIELD EFFECT TRANSISTORS

Carroll R. Perkins, Balboa Island; Everett L. Shaffstall, Fountain Valley; James L. Gundersen, Wilmington, and Robert N. Yoder, Huntington Beach, all of, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 22, 1969, Ser. No. 886,924
Int. Cl. H03f 3/68
U.S. Cl. 330—30 4 Claims



Complementary waveform signals are amplified in respective channels of a dual channel differential amplifier, each channel including a plurality of cascaded field effect transistors. A field effect transistor biased to saturation furnishes an essentially constant current to the first transistor of each channel. A push-pull arrangement including a pair of series connected field effect transistors is provided at the output of each channel. The entire circuit may be fabricated on a single semiconductor substrate using MOS technology.

3,581,227

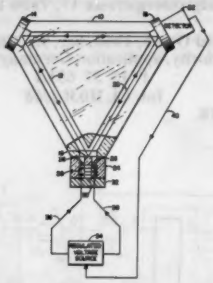
ADJUSTABLE, THIN MEMBRANE MIRROR FOR USE IN THE STABILIZATION OF RING LASERS

Theodore J. Podgorski, Maplewood, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 18, 1968, Ser. No. 722,227
Int. Cl. H01s 3/08
U.S. Cl. 331—94.5 1 Claim

Apparatus to remotely move a mirror in a laser. The driv-

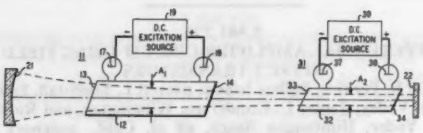
ing means operates against a thin membrane forming a portion of the laser housing so that a mirror fastened to the inside of the membrane may be moved as desired.



3,581,228
SIMULTANEOUS TRANSVERSE AND LONGITUDINAL MODE LOCKING IN A LASER EMPLOYING AN ACTIVE ABSORPTION CELL

Peter W. Smith, Little Silver, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 18, 1968, Ser. No. 737,881
Int. Cl. H01s *3/02*
U.S. Cl. 331—94.5 **8 Claims**

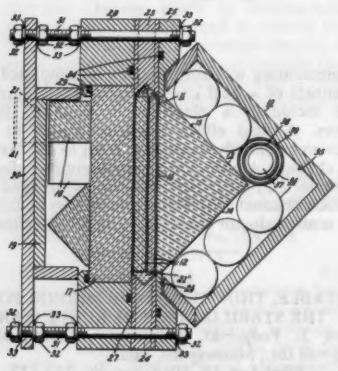


A laser that oscillates in multiple transverse and longitudinal modes is pulsed by a mutual adaptation of an absorption cell having a substantially matching absorption line and the other components of the laser to phase-lock simultaneously the traverse and longitudinal modes of the laser by saturable absorption. Simultaneous locking is accomplished provided that the laser resonator is designed such that the longitudinal mode separation frequency is an integral multiple of the transverse mode separation frequency.

3,581,229
FACE-PUMPED LASER DEVICE WITH OPTICAL PATH FOLDING

William S. Martin, Schenectady, N.Y., assignor to General Electric Company

Filed Aug. 27, 1968, Ser. No. 755,653
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **10 Claims**

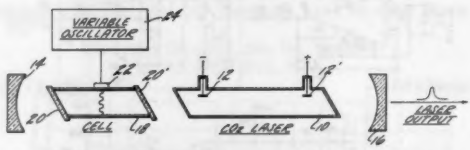


A face-pumped laser device employs a prism with an index of refraction at least equal to the square root of two adjacent and optically contacted to the surface of the active laser medium. The prism provides for refraction and total internal reflection of the pumping radiation which is directed to and is substantially uniformly incident upon the surface of the active laser medium, thus increasing the pumping flux density by the square root of two over conventional techniques. A plurality of prisms positioned on the opposite side of the laser medium are utilized in conjunction with the first mentioned prism to fold the optical path in such a manner that a generated or input laser beam may be made to penetrate a different region of the laser medium on each pass.

3,581,230
PASSIVE Q-SWITCH AND MODULATOR FOR CO2 LASERS

David C. Smith, Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Jan. 27, 1969, Ser. No. 793,945
Int. Cl. H01s *3/10, 3/22, 3/11*
U.S. Cl. 331—94.5 **5 Claims**

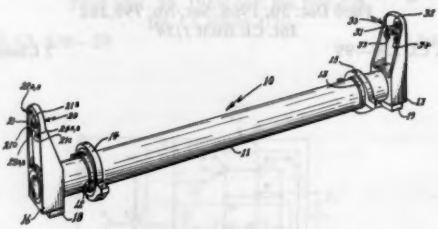


A cell containing a gaseous bleachable dye is positioned in the optical feedback cavity of a carbon dioxide laser to Q-switch the laser. An acoustic wave generated through the gas will cause the output of the laser to be modulated at the acoustic frequency.

3,581,231
ULTRA-STABLE LASER CAVITY MIRROR SUPPORT ASSEMBLY

Robert J. Freiberg, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Air Force

Filed June 17, 1969, Ser. No. 833,907
Int. Cl. H01s *3/02;* **F16h** *29/20*
U.S. Cl. 331—94.5 **2 Claims**

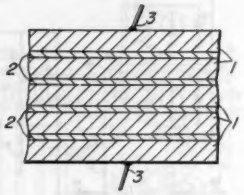


An ultrastable laser cavity mirror support assembly, for use with laser utilizing external mirrors, which prevents laser output loss caused by mirror misalignment. The assembly includes: a beryllium open-ended tube; two circumferential supports for the tube, each located a predetermined equal distance inward from the nearest end of the tube; first and second counterweighted flat plates affixed, respectively, to each end of the tube and parallel to each other; first and second mirror tuning mechanisms, each mounted on and supported by, respectively, the first and second counterweighted flat plates; and means for rigidly securing the tube, and components mounted and affixed thereto, to a laser housing and an external abutment in the desired orientation.

3,581,232
TUNABLE SEMICONDUCTOR BULK NEGATIVE RESISTANCE MICROWAVE OSCILLATOR

Yoshimasa Murayama, and Hirokazu Kurono, both of Hachioji-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 27, 1968, Ser. No. 740,635
Claims priority, application Japan, July 14, 1967, 42/45061
Int. Cl. H03b 7/14
U.S. Cl. 331—107 8 Claims

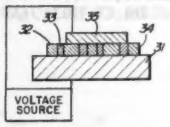


A solid-state oscillator comprising a semiconductor element which has a bulk negative resistance and wherein injected excess carriers are present in operation, said device oscillating with a circuit frequency of a resonator as the space charge limiting current due to the injected carriers becomes unstable owing to the negative resistance.

3,581,233
SOLID-STATE OSCILLATOR ELEMENT

Akio Yamashita, Ikeda-shi, and Takehiro Tuzaki, Toyonaka-shi, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of application Ser. No. 651,278, July 5, 1967, now abandoned. This application Aug. 5, 1969, Ser. No. 847,684
Int. Cl. H03b 7/14
U.S. Cl. 331—107 5 Claims

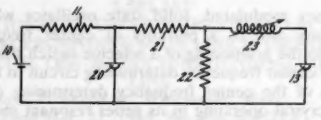


A solid-state oscillator element formed of a thin film of a polycrystalline semiconductor of which the minimum value of the conduction band represents a different energy level depending upon the direction in the wave vector space (usually referred to as "k-space"). Thus, the solid-state oscillator element is capable of producing a microwave oscillation.

3,581,234
BIAS AND TEMPERATURE COMPENSATING CIRCUIT FOR TUNNEL DIODE OSCILLATORS

Milton D. Bloomer, Scotia, N.Y., assignor to General Electric Company

Filed Dec. 10, 1969, Ser. No. 883,750
Int. Cl. H03b 7/08
U.S. Cl. 331—107T 9 Claims

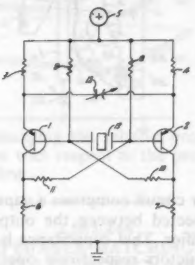


A compensation technique for tunnel diode oscillators is disclosed wherein the peaks in the characteristic curves (frequency vs. bias) for various operating temperatures are made to coincide in the region of the peak. The effects of bias and temperature are separately compensated and two techniques are disclosed for compensating each.

3,581,235
CRYSTAL STABILIZED HIGH FREQUENCY TRANSISTOR MULTIVIBRATOR

Paul Y. Siu, Los Angeles, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 19, 1969, Ser. No. 800,411
Int. Cl. H03b 5/36; H03k 3/282
U.S. Cl. 331—113 10 Claims

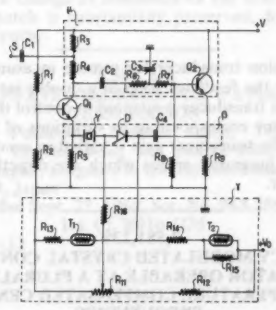


An astable multivibrator operating in a current mode comprising two transistors with resistive cross-coupling between each collector and the other base and capacitive cross-coupling between emitters. The natural frequency of the multivibrator is determined by the emitter resistors and the cross-coupling capacitance, which is preferably adjustable. A crystal having a parallel resonant overtone mode at the desired frequency of operation of the oscillator is connected between the bases of the transistors. The cross-coupling capacitance is adjusted so that the natural frequency of the multivibrator is slightly higher than the resonant frequency of the crystal.

3,581,236
HIGH STABILITY OSCILLATOR

Leon Berman, Asnieres, France, assignor to C.I.T. Compagnie, Industrielle Des Telecommunications, Paris, France

Filed Jan. 7, 1969, Ser. No. 789,540
Claims priority, application France, Jan. 8, 1968, 135,225
Int. Cl. H03b 5/36
U.S. Cl. 331—116 5 Claims

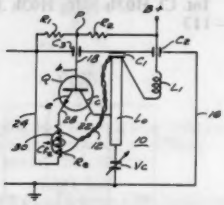


A high stability oscillator having an amplifying channel including a phase adjusting member and a separate reaction channel including a resonant crystal and a temperature stabilizing circuit, the phase adjusting member being effective to compensate for aging of the crystal without affecting the temperature stabilization of the oscillator.

3,581,237
OSCILLATOR FEEDBACK CIRCUIT FOR USE IN UHF TUNER

Masaharu Nakagawa, Tokyo, Japan, assignor to Alps Electric Company Limited, Tokyo, Japan

Filed Dec. 26, 1968, Ser. No. 787,112
Claims priority, application Japan, Mar. 28, 1968, 43/25002
Int. Cl. H03b 5/18
U.S. Cl. 331—117D 10 Claims

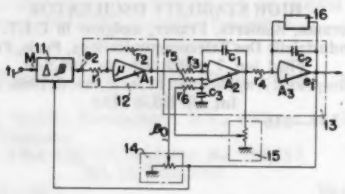


An RF oscillator circuit comprises a capacitance in a feedback circuit connected between the output and input terminals of an amplifier. That capacitance is defined by a pair of overlying conductors respectively operatively connected to the amplifier input and output terminals.

3,581,238
TRANSMISSION TRANSDUCER FOR REMOTE MEASUREMENT

Etsujiro Shimemura, Tokyo, and Masao Iwamiya, Yokohama-shi, both of, Japan, assignors to Ltd. The Tsurumi-Seikikosakv-Sho Co., Yokohama-shi, Japan

Filed Sept. 30, 1968, Ser. No. 763,782
Claims priority, application Japan, Sept. 30, 1967, 42/62756
Int. Cl. H03b 5/20
U.S. Cl. 331—135 7 Claims



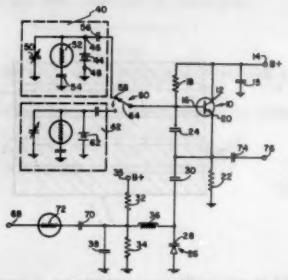
A transmission transducer for remote measurement is incorporated in the feedback loop of a double integrator type oscillator. The transducer is adapted to control the frequency of the oscillator corresponding to variations of gains of the transducer. The transducer gain is varied in accordance with variations of measured values which are directly sensed by the transducer.

3,581,239
FREQUENCY MODULATED CRYSTAL CONTROLLED OSCILLATOR OPERABLE AT A PLURALITY OF TEMPERATURE COMPENSATED CENTER FREQUENCIES

William J. Knutson, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 5, 1969, Ser. No. 804,496
Int. Cl. H03b 5/32; H03c 3/20, 3/28
U.S. Cl. 332—18 6 Claims

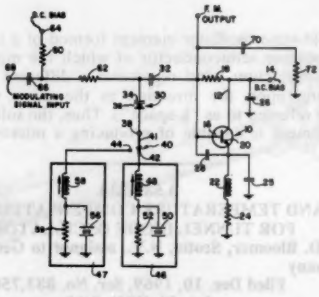
A frequency modulated, solid state, crystal controlled oscillator, including a voltage variable capacitor, for use in portable transmitters wherein it is desired to operate at a plurality of center frequencies that are stable with temperature change. Any one of a plurality of center frequency determining circuits, each including a crystal operating in its parallel resonant mode, can be selected to determine a desired center frequency. Each crystal is connected in parallel with a temperature compensating network. The biasing point of the voltage variable capacitor, the net inductance of a circuit which applies the modulating voltage thereto are selected to cause the nonlinear characteristics of the crystal and voltage variable capacitor to counterbalance each other so that linear modulation is attained.



3,581,240
FREQUENCY MODULATED SOLID STATE CRYSTAL OSCILLATOR PROVIDING A PLURALITY OF CENTER FREQUENCIES

Ralph T. Enderby, Bellwood, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

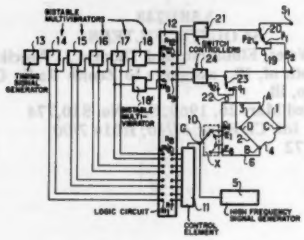
Filed Jan. 13, 1969, Ser. No. 790,726
Int. Cl. H03c 3/28
U.S. Cl. 332—26 8 Claims



Frequency modulated, solid state oscillator which oscillates at any one of a plurality of center frequencies in response to the positioning of a selector switch that connects a selected center frequency determining circuit to the oscillator. Each of the center frequency determining circuits includes a crystal operating in its series resonant mode, an inductor for tuning, and a resistor for suppressing undesirable crystal operation. Frequency modulation is accomplished by impressing a modulating voltage across a varactor included in the frequency control circuit of the oscillator to thereby

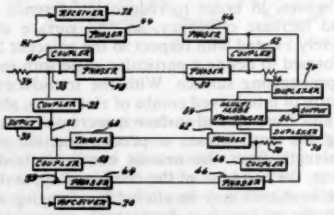
change its capacitance and consequently change the frequency of oscillation.

3,581,241
SIDEBAND GENERATOR HAVING STEP CONTROLLED MODULATION
Michel Schilliger, 31, rue des Oiseaux 91, Morangis, France
Filed May 24, 1968, Ser. No. 731,868
Claims priority, application France, May 24, 1967, 107,704
Int. Cl. H03c *1/54*
U.S. Cl. 332—47 **9 Claims**



A sideband generator, comprising a high frequency signal generator of frequency f_0, a circuit for generating low frequency signals of frequency $F_0=1/T$, characterized in that it comprises a bridge with two inputs and two outputs forming the sum and/or the difference of the signals fed to the inputs, the two inputs of said bridge being connected to the source of high frequency energy by means of numerically controlled distributing and phase-shifting means.

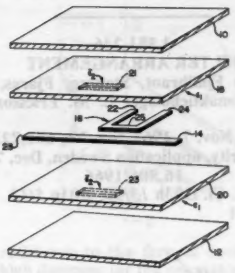
3,581,242
VARIABLE POLARIZER FOR MICROWAVE SYSTEMS
Louis J. Lavedan, Clearwater, Fla., assignor to the United States of America as represented by the Secretary of the Air Force
Filed Oct. 20, 1969, Ser. No. 867,619
Int. Cl. H01p *5/12, 1/16;* **H03h** *7/36*
U.S. Cl. 333—1 **1 Claim**



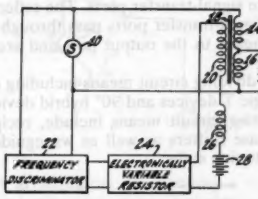
A dual-channel receiver polarizer microwave system including a pair of waveguide systems each having adjustable phasers mounted in parallel and in series and connected to a source of input signals and a multimode transducer for transmitting and the transducer and a receiver for receiving.

3,581,243
DIRECTIONAL COUPLER WHEREIN DIELECTRIC MEDIA SURROUNDING MAIN LINE IS DIFFERENT FROM DIELECTRIC MEDIA SURROUNDING COUPLED LINE
Andrew Alford, 71 Bacon St., Winchester, Mass.
Filed Mar. 21, 1969, Ser. No. 809,213
Int. Cl. H01p *5/14, 3/08*
U.S. Cl. 333—10 **7 Claims**

In a transmission line device for coupling a wave traveling in a particular direction along a main line to a coupled line, higher directivity is obtained by utilizing dielectric media of dissimilar dielectric constants in the main line and the coupled line, or by changing the relative propagation velocity along the main line with respect to the propagation velocity along the coupled line.



3,581,244
AUTOMATIC IMPEDANCE MATCHING CIRCUITS FOR VARIABLE FREQUENCY SOURCE
William Irving Smith, Palmyra, N.J., assignor to RCA Corporation
Filed Jan. 28, 1969, Ser. No. 794,665
Int. Cl. H03h *7/40*
U.S. Cl. 333—17 **3 Claims**



An electronically controlled impedance transformer is disclosed in which a tapped inductor is used as the impedance matching coupling means between the source and the load, and in which the inductance of the inductor is changed in accordance with the change of frequency of the current supplied by the source to preserve the impedance match. The coupling means may be tuned and the tuning may be made to track with the change in frequency of the source while the impedance match is substantially preserved, for both high and low Q circuits.

3,581,245
MICROWAVE ABSORBER FOR WAVEGUIDE TERMINATION
Kunio Ohi, Fuchu-shi; Hideaki Inoue, Tokyo; Toshio Nakayama, Tachikawa-shi, and Sosuke Ishii, Kokubunji-shi, all of, Japan, assignors to Hitachi Electronics Co., Ltd., Kodaira-shi, Japan
Filed Sept. 27, 1968, Ser. No. 763,255
Int. Cl. H01p *1/26*
U.S. Cl. 333—22 **6 Claims**

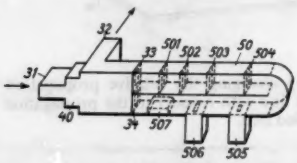
A microwave terminator having a microwave absorber in the form of a plate which is fixed bodily to a shortcircuiting

plate of metal disposed at a right angle with the axis of a waveguide. The microwave absorber is made from a composition consisting of a powdery ferromagnetic material, carbon powder and a binder therefor, and is shaped to have a stepwise or continuously varied thickness distribution.

3,581,246
FILTER ARRANGEMENT

Tore Torstensson Fjallbrant, Staborg, Fjaras, Sweden, assignor to Telefonaktiebolaget L. M. Ericsson, Stockholm, Sweden

Filed Nov. 7, 1967, Ser. No. 681,223
Claims priority, application Sweden, Dec. 7, 1966, 16,806/1966
Int. Cl. H03h *13/00;* **H01p** *5/12*
U.S. Cl. 333—24.1 **5 Claims**



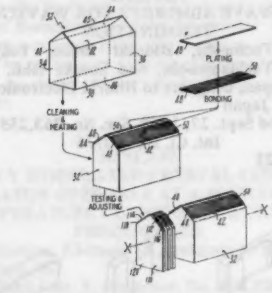
There is disclosed a filter comprising a power dividing circuit means including an input port adapted to receive signals, an output port adapted to transmit signals and two signal-transfer ports. Signals received by the input port are power divided and fed to the signal-transfer ports for transmission therefrom to a reactive circuit means which reflects the signals back to the signal-transfer ports. The reflected signals received by the signal-transfer ports pass through the power dividing circuit means to the output port and are geometrically added.

Various power dividing circuit means including differential transformers, magic T devices and 90° hybrid devices are disclosed. The reactive circuit means include, reciprocal and nonreciprocal phase shifters as well as waveguide elements having irises and tuning stubs.

3,581,247
DELAY LINES HAVING NONDISPERSIVE WIDTH-SHEAR MODE PROPAGATION CHARACTERISTICS AND METHOD OF MAKING SAME

John F. Belford, Westport; Donald E. Gibeau, Hazardville, and John Ciriello, Canton, all of, Conn., assignors to Andersen Laboratories, Incorporated, Bloomfield, Conn.

Continuation-in-part of application Ser. No. 736,675, June 13, 1968. This application Sept. 27, 1968, Ser. No. 763,199
Int. Cl. H03h *9/16, 9/30*
U.S. Cl. 333—30 **9 Claims**

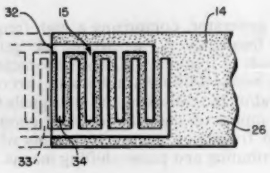


Thin guided waveform delay lines of this invention feature a maximum thickness in the order of two ½ wavelengths with full width transducers coextensive with the delay line thickness providing nondispersive width-shear mode propagation characteristics. A low cost mass production method of making a substantially identical series of such delay lines if also disclosed including steps of forming a composite preshaped block of acoustically conductive material with signal transducers affixed thereto and then cutting the composite block with its signal transducers into a plurality of substantially identical delay line segments. Completed delay line segments each can be housed in a casing having associated electrical circuit components of each delay line segment.

3,581,248
ACOUSTIC FILTERS

Adrian J. De Vries, Elmhurst, and Thomas J. Wojcik, Mount Prospect, both of, Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Mar. 26, 1969, Ser. No. 810,774
Int. Cl. H04r *17/10;* **H01v** *7/00*
U.S. Cl. 333—72 **1 Claim**



A body of piezoelectric material propagates acoustic surface waves. Coupled to a surface of the body is a first transducer that launches the waves. Spaced on the same surface from the first device is a second transducer that responds to the launched waves. In order to reduce interference from reflections and increase efficiency, an end surface of the body is selectively located with respect to the adjacent transducer and is formed to define a particular angle with respect to the wave propagating surface. With the transducer elements in the form of interleaved combs of electrodes, absorption of reflections from an end surface is increased by effectively locating the end surface a precise fraction of an acoustic wavelength from the nearest comb electrode or tooth. Moreover, the response of the combined apparatus to signals being transmitted may be altered by changing either the angle that the end surface forms with respect to the propagating surface or by changing the spacing of the end surface from the transducer. The response also may be altered by depositing a different material on the wave propagating surface.

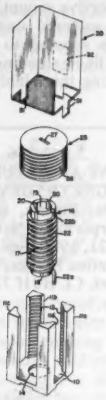
3,581,249
MINIATURE HELICAL RESONATORS

Frederick E. Spangler, and Henry A. Schaefer, both of Lynchburg, Va., assignors to General Electric Company

Filed Jan. 27, 1969, Ser. No. 794,332
Int. Cl. H03h *1/00, 5/08*
U.S. Cl. 333—705 **7 Claims**

A helical coil resonator is wound on a dielectric form mounted on a dielectric base. Four posts are mounted on the base at the corners of a square, and are threaded on their inner faces to form a threaded receptacle that is concentric about the coil. A cup-shaped dielectric tuning element is threaded in the receptacle for movement toward and away

from the coil, and a metallic can is positioned around the posts. The capacity between the coil and can, and hence the

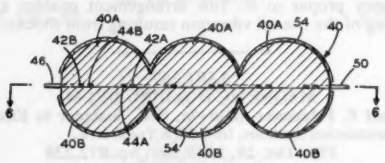


resonant frequency of the resonator, is varied by adjusting the position of the tuning element relative to the coil.

3,581,250
DELAY LINE HAVING NON PLANAR GROUND PLANE, EACH LOOP BRACKETING TWO RUNS OF MEANDERING SIGNAL LINE

Edwin S. Eichert, Bryn Mawr, and William T. Storey, II, West Chester, both of, Pa., assignors to Technitrol, Inc., Philadelphia, Pa.

Filed Apr. 12, 1968, Ser. No. 720,998
Int. Cl. H01p *5/12, 3/02, 3/08*
U.S. Cl. 333—31 **9 Claims**



An electrical component such as a delay line comprising a first signal conductor and a second signal conductor spatially displaced from and electrically cooperable with said first signal conductor. At least one of said first or second signal conductors extending through an enclosure of nonconductive material having nonplanar upper and lower surfaces to provide increased isolation between an input and an output signal.

A method of making the electrical component also is disclosed.

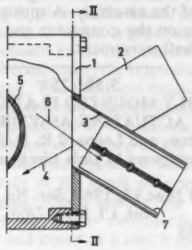
3,581,251
MICROWAVE TUBE COOLING ASSEMBLY

Friedrich Potzl, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 28, 1969, Ser. No. 803,256
Claims priority, application Germany, Mar. 8, 1968, P44196
Int. Cl. H01p *1/16, 7/06*
U.S. Cl. 333—83 **7 Claims**

The invention relates to a connecting flange for a microwave tube arranged in an external resonator space, the connecting flange having two tubular pieces for the inlet and the outlet of the cooling air.

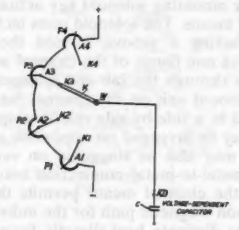
The air enters the resonator space in oblique direction, flows around the microwave tube along an approximately α-shaped path, and emerges from the other slanting tubular piece. Axial metal plates in the tubular pieces form an extremely low resistance to the flow of cooling air while exhibiting very high damping for the resonator waves.



3,581,252
POTENTIOMETER CIRCUIT ARRANGEMENT FOR DERIVING A TUNING VOLTAGE

Franz Sacher, Vienna, Austria, assignor to Wiener Schwachstromwerke Gesellschaft m.b.H., Vienna, Austria

Filed Sept. 23, 1968, Ser. No. 761,482
Claims priority, application Austria, Feb. 22, 1968, A1,675/68
Int. Cl. H03j *5/02, 3/18*
U.S. Cl. 334—15 **6 Claims**

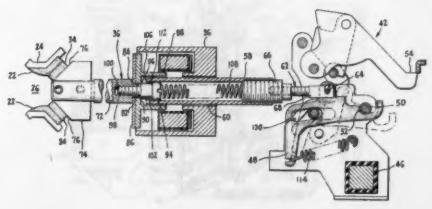


A circuit arrangement for deriving a tuning voltage for controlling a tuning capacitance includes a plurality of potentiometers connected to form a voltage divider, each having a resistance path and a tap. The tap is electrically connected to the resistance path, and the resistance paths are connected in series. A selector switch comprises a plurality of contacts, each connected to a respective one of the taps, and a contact arm selectively engageable with the contacts. Each potentiometer corresponds to a respective frequency range, such as a channel or a group of channels.

3,581,253
ARMATURE-CONTACT ROD CONNECTION FOR CURRENT-LIMITING BREAKER

Norman R. Beaudoin, Bristol, and Robert W. Lauben, Farmington, both of, Colo., assignors to General Electric Company

Filed Oct. 15, 1969, Ser. No. 866,533
Int. Cl. H01h *77/10*
U.S. Cl. 335—16 **9 Claims**



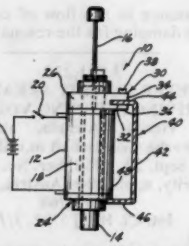
A current-limiting circuit breaker is provided with a new and improved contact-operating assembly having a contact

rod operatively joined to a tubular operating shaft by an axially extending stepped connector fixedly received within the rod and slidably retained by the operating shaft to permit limited relative movement between the operating shaft and the contact rod of the assembly. A spring mounted within the tubular shaft acts on the connector and may be adjusted independently of shaft movement.

3,581,254
ADJUSTABLY MOUNTED PLAYER PIANO KEY ACTUATING ASSEMBLY

Richard L. Cannon, and Leonard R. D. Smith, both of Yankton, S. Dak., assignors to Dale Electronics, Inc., Columbus, Nebr.

Filed June 13, 1969, Ser. No. 833,066
Int. Cl. H01t 7/08
U.S. Cl. 335—255 **10 Claims**

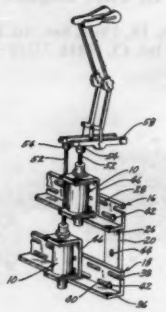


An assembly for actuating piano playing means which includes means for mounting solenoid key actuating units on a metallic channel means. The solenoid units include a laterally extending tab having a groove formed therein which is adapted to receive one flange of the channel means. A screw member extends through the tab and engages the flange to maintain the solenoid unit on the channel means. The units may be arranged in a side-by-side relationship on one channel means or may be arranged on oppositely disposed channels. The units may also be staggered on vertically spaced channels. The metal-to-metal connection between the solenoid units and the channel means permits the channels to serve as a common magnetic path for the individual coils and as a heat sink to dissipate heat directly from the coils. An embodiment of the assembly is also disclosed wherein the solenoid has a tab extending therefrom and which is removably received between a pair of flanges extending from the channel means.

3,581,255
MOUNTING MEANS FOR PLAYER PIANO KEY ACTUATING ASSEMBLY

Richard L. Cannon, and Leonard R. D. Smith, Yankton, both of, S. Dak., assignors to Dale Electronics, Inc., Columbus, Nebr.

Continuation-in-part of Ser. No. 833,066, June 13, 1969
Filed June 24, 1970, Ser. No. 49,349
Int. Cl. H01t 7/08
U.S. Cl. 335—255 **7 Claims**



An assembly for actuating piano playing means which includes means for mounting solenoid key actuating units on a metallic support means. The support means includes a pair of spaced apart elongated angle members. Each of the angle members have upper and lower rows of horizontal slots formed therein which are staggered with respect to each other to permit the selective mounting of the solenoid units thereon. Each of the solenoid units have a frame means thereon which may be secured to the angle members by means of screws or the like extending through the slots in the angle members and being threadably received by the frame means.

3,581,256
SHOCK RESISTANT ARMATURE FOR ELECTRO-MAGNETIC DEVICES

Charles Vazquez, Paris, France, assignor to International Standard Electric Corporation, New York, N.Y.

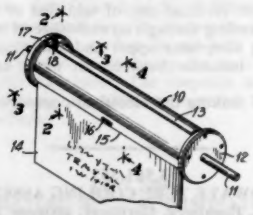
Filed Mar. 21, 1969, Ser. No. 809,270
Claims priority, application France, Mar. 28, 1968, 145,857
Int. Cl. H01f 7/08
U.S. Cl. 335—271 **5 Claims**

Structure for damping the vibrations in armatures of electromagnets. The shock of operating pieces in electromechanical devices is reduced by making the armature out of several parts. These parts are juxtaposed, but they are not rigidly associated with each other. Each part vibrates at a frequency proper to it. This arrangement enables a great damping of the overall vibration resulting from shocks.

3,581,257
MAGNETIC HOLDING DRUM

Edmund F. Priessnetz, Baldwin, N.Y., assignor to Electronic Transmission Systems, Inc., New York, N.Y.

Filed Oct. 29, 1969, Ser. No. 872,238
Int. Cl. H01f 7/20
U.S. Cl. 335—285 **7 Claims**

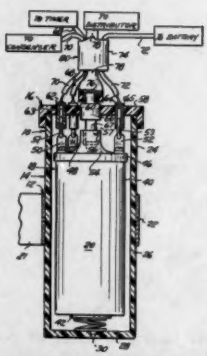


A magnetic holding drum particularly suitable for optical reproduction devices such as facsimile transmitters, which enables the copy to be held substantially flat over the surface of the drum while the drum is either rotated or optically scanned. The drum includes a plurality of spaced-apart, radially disposed elongated magnets on its cylindrical surface. A sliding holder which is slidably retained in grooves at each end of the drum is magnetically affixed at any desired position on the surface of the drum in order to maintain the copy flattened against the drum's surface.

3,581,258
ELECTROMAGNETIC WIRING SYSTEM OF INTERLINKED COILS PARTICULARLY SUITABLE IN A CURRENT TRANSFORMER FOR HIGH VOLTAGES
Friedrich Raupach, Messwandler-Bau GmbH, Nuernberger Strasse 199, D-86 Bamberg, Germany
Filed Feb. 13, 1969, Ser. No. 798,921
Int. Cl. H01f 40/06
U.S. Cl. 336—173 32 Claims

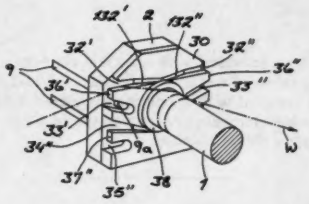
An electromagnetic energy transforming device particularly suitable in a current transformer for high voltages and similarly interlinked coils comprising at least one core; at least one coil threaded through said core; said core having a closed symmetrical geometrical z–y shape of a z–y longitudinal cross section with at least two core legs in parallel and at least one core bar interconnecting said legs; said core having a x–y symmetrical cross section perpendicular to the length of said core substantially elongated, with a longer "x" axis and a shorter "y" axis and a "z" axis perpendicular to said x and y axes; said at least one core bar being symmetrically gradually twisted relative to said core legs with the core "x" axis being parallel to the "z" core axis of said at least two core legs in the center of said core bar between said core legs; the surface of said core bar adjacent the surface of said coil bar being of a shape closely mating with said surface of said coil bar in three dimensions.

3,581,259
QUICKLY-REMOVABLE IGNITION COIL INSTALLATION FOR AUTOMOBILE THEFT PREVENTION
Ernest Brunside, 3843 Rohns Ave., Detroit, Mich.
Filed Nov. 19, 1969, Ser. No. 877,890
Int. Cl. H01f 27/02
U.S. Cl. 336—90 8 Claims



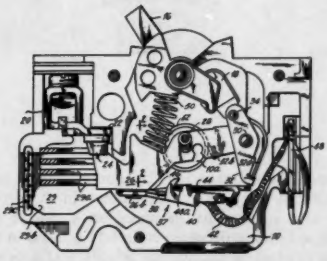
An ignition coil receptacle adapted to be mounted near an automobile engine has a removable cover containing first, second and third low-tension terminals and a single high-tension terminal detachable engageable respectively with first, second and third correspondingly located low-tension electrodes and a single high-tension electrode mounted in the end cap of an automobile ignition induction coil removably mounted in the receptacle. One end of the primary winding of the coil is connected as usual to one end of the secondary winding thereof and their common junction is connected to the first low-tension electrode which in turn is connected directly to the second low-tension electrode. The opposite end of the primary winding is connected to the third low-tension electrode whereas the opposite end of the secondary winding is connected to the single high-tension electrode. The first, second and third low-tension cover terminals are connected to first, second and third low-tension cables and the single high-tension cover terminal to a high-tension cable, all of these cables being contained within a flexible tubular casing. The first low-tension cable leads to a conventional timer, the opposite pole of which is grounded. The interconnected second low-tension cable is connected to one side of the conventional coil condenser, the opposite side of which is grounded to the engine. The third low-tension cable leads to one terminal of a conventional storage battery, the opposite terminal of which is grounded to the automobile frame. The single high-tension cable is connected to the rotor of the conventional distributor, the fixed poles of which are connected to the central electrode of the spark plug whose casings are grounded to the engine. Upon leaving the automobile, the driver pulls outward upon the receptacle cover, thereby withdrawing the coil and cover as a unit from the receptacle. He then pulls the cover terminals and coil electrodes apart from one another to separate them, replaces the cover upon the receptacle, and carries the ignition coil away with him, thereby preventing theft of the automobile.

3,581,260
FLANGE FOR ELECTROMAGNETIC COIL
Pio Andreis, Milan, Italy, assignor to Societa Italiana Telecommunicazioni Siemens S.P.A., Milan, Italy
Filed Oct. 13, 1969, Ser. No. 865,700
Claims priority, application Italy, Oct. 14, 1968, 22469
Int. Cl. H01f 15/10
U.S. Cl. 336—192 10 Claims



A spool body for a relay coil is formed from a ferromagnetic core bounded by two nonconductive flange plates; at least one of these plates has a pair of notches, tangential to the core, for the ends of each winding to be wound thereon and a pair of depressions adjacent these notches on the outer plate surface remote from the core to receive these wire ends for soldering to respective terminals at locations sheltered from the coil winding or windings.

3,581,261
MOLDED CASE CIRCUIT BREAKER HAVING AN AUXILIARY CONTACT SEPARATING SPRING
John De Torre, and Henry S. Wingard, both of Albemarle, N.C., assignors to Federal Pacific Electric Company
Filed July 28, 1969, Ser. No. 845,275
Int. Cl. H01h 71/16, 71/64, 75/12
U.S. Cl. 337—67 3 Claims



A circuit breaker of the molded case type incorporating a spring that accelerates movement of the movable contact to

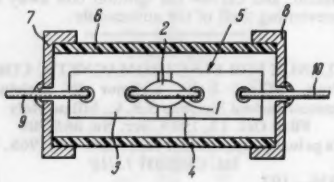
the open circuit position. The same spring augments contact pressure between the movable and stationary contacts in the closed circuit condition of the circuit breaker.

3,581,262

SAFETY FUSE WITH GLASS COATING ON FUSIBLE PORTION

Efim Yakovlevich Badinter, ulitsa Fedko, 8, kv. 79; Zinovy Ieremeevich Zelikovsky, ulitsa Pushkina, 35, kv. 13, and Irina Georgievna Lazurevskaya, ulitsa Gorkogo,221a., all of Kishinev, U.S.S.R.

Filed Mar. 6, 1969, Ser. No. 804,797
Int. Cl. H01h *85/14*
U.S. Cl. 337—159 **4 Claims**



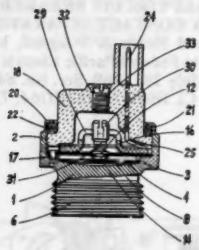
A safety fuse provided with a fusible element adapted for protection against overloads, the surface of said fusible element being covered with a continuous glass insulation coating. The fusible element may be a length of a cast microwire provided with a glass insulation.

3,581,263

THERMALLY RESPONSIVE SWITCH

Antonio Moro, Milan, Italy, assignor to Soc. per Azioni Fratelli Borletti, Milan, Italy

Filed July 8, 1968, Ser. No. 743,157
Int. Cl. H01h *37/04, 37/28, 37/54*
U.S. Cl. 337—380 **12 Claims**



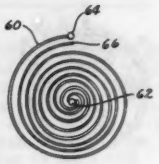
A thermally responsive switch comprising a housing including a metal body with a recess therein. A cap of insulating material is secured to the metal body closing the recess. A disc-shaped bimetallic strip is loosely housed in the recess. The fixed contact is carried by a stiff metal bridge which bridges across the recess. The position of the fixed contact is adjustable. Adjustment being made by a tool inserted through an aperture in the cap.

3,581,264

METHOD OF CREATING VARIABLE ELECTRICAL RESISTANCE AND MEANS FOR CREATING THE SAME

Herman R. Person, Columbus, Nebr., assignor to Dale Electronics, Inc., Columbus, Nebr.

Division of Ser. No. 593,998, Nov. 14, 1966, Pat. No. 3,480,832.
Filed Apr. 21, 1969, Ser. No. 817,965
Int. Cl. H01c *7/16*
U.S. Cl. 338—20 **3 Claims**



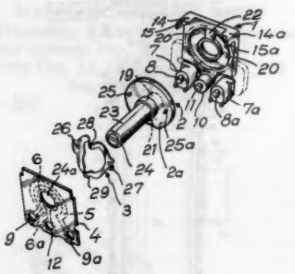
A variable magnetic resistor comprising a layer of high permeability magnetic alloy formed into a helix with a layer of insulation material in between each convolution of the helix, and an electrical terminal secured to opposite ends of the layer of alloy. The method of creating variable resistance by passing a current of sufficient magnitude through said alloy material that the current passing through the alloy will be forced to the side edges thereof by the magnetic field around each convolution of the helix, whereby the resistance of the alloy will be increased as current moves away from a normal low-voltage path through the broad expanse of the entire cross-sectional area of the coil to a more confined path at the side edges of the coil.

3,581,265

MINIATURIZED POTENTIOMETERS

Eugenio Falco, 13, Avenue Taille Bourg, Paris 110, France

Filed Feb. 24, 1969, Ser. No. 801,457
Claims priority, application France, Feb. 27, 1968, Dec. 3, 1968, 141.458;176.382
Int. Cl. H01c *9/02*
U.S. Cl. 338—174 **13 Claims**



A potentiometer having a cover of conductive material formed by molding in a single piece with a pair of lateral terminals provided to be placed at the ends of a resistance track, a collector, and a base on which the resistance track and the collector are printed. The lateral terminals are separated from the cover during the step of crimping the cover on the base.

3,581,266

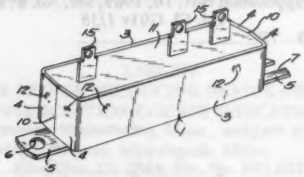
HOUSED RESISTOR

Lionel E. Weyenberg, N34 W23575 Capitol Drive Parkway, Pewaukee, Wis.

Filed Dec. 30, 1968, Ser. No. 787,806
Int. Cl. H01c *1/02*
U.S. Cl. 338—253 **5 Claims**

A potted resistor including an outer metal casing, and a re-

sistance element is embedded within an insulating material contained within the casing. Terminal strips are connected to

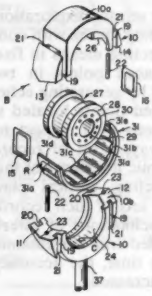


the resistance element and project outwardly of the insulating material in position to be connected to electrical leads.

3,581,267
ELECTRIC CONDUCTOR BEARINGS

Robert Z. Schreffler, Chester, Va., assignor to Electric Conductor Bearings, Incorporated, Chester, Va.

Continuation-in-part of application Ser. No. 562,956, June 30, 1966. This application Aug. 14, 1968, Ser. No. 752,666
Int. Cl. H01r *39/28*
U.S. Cl. 339—8 **10 Claims**

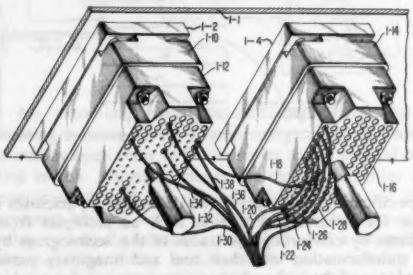


An electric conductor bearing arrangement includes a fixed outer race, a shaft-mounted rotatable inner race and a plurality of roller bearing devices for completing a current path therebetween. The bearing devices each include a cylindrical coil spring arranged with the longitudinal axis thereof parallel to the shaft axis. The spring bearings which are transversely compressible compensate for any misalignments by assuming a shape compatible with the existing alignment.

3,581,268
ELECTRICAL CONNECTION AND DISTRIBUTION SYSTEM

Harold Akst, West Chester, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 1, 1969, Ser. No. 812,185
Int. Cl. H01r *29/00*
U.S. Cl. 339—18 **5 Claims**

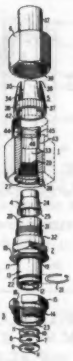


This invention discloses an electrical connection and distribution system including one or more unique distribution connectors. Each of sad distribution connectors is capable of distributing current or voltage to a plurality of wire connections from an individual connection. The connector shell envisioned, for use in this connector, is of a commercially available configuration. By including one or more unique jumper means in these commercially available connectors, a new and novel connector combination is created wherein a single wire enters a terminal one side of the connector and multiple wires leave corresponding multiple terminals on the same side to provide a distribution system for the current or voltage source which entered the single terminal.

3,581,269
CONNECTOR FOR COAXIAL CABLE

Dean R. Frey, Dover; George L. Hone, Berkeley Heights, and Edward L. Ramsey, Jr., Martinsville, all of, N.J., assignors to Bell Telephones Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 11, 1969, Ser. No. 806,098
Int. Cl. H01r *17/04, 33/34*
U.S. Cl. 339—94 **4 Claims**

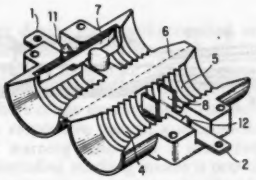


This disclosure describes a connector for a communications coaxial cable. The connector structure includes a collapsible bushing which is wedged into a positive grip with the cable jacket, and a separate wedge-type bushing to grip the outer conductor. A resilient seal is afforded around the center conductor. Placement of the cable in the connector and of the latter onto equipment housing requires no special tools.

3,581,270
THERMOPLASTIC LAMP HOLDER

Larry L. Shroyer, Wolcottville, Ind., assignor to Lyall Electric, Inc., Albion, Ind.

Filed Apr. 4, 1969, Ser. No. 813,610
Int. Cl. H01r *13/48*
U.S. Cl. 339—160 **7 Claims**



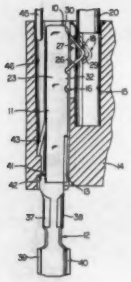
A multiple lamp holder is disclosed which is characterized by its simplicity of construction. The lamp holder is made up

of four pieces: two conductive terminals, an insulating bushing which holds the two terminals apart and an insulating housing which is molded in a single piece and consists of two complementary halves of the housing joined together in a hinged relationship so that the two halves may be folded together so as to enclose the terminals and bushing and the resulting structure need only to be sealed along a single seam.

3,581,271
CONTACT UNIT HAVING CONTACT PROTECTIVE MEANS

Heinz Knitter, Heilbronn, and Josef Veszelik, Weinsberg, Germany, assignors to The Bunker-Kame Corporation, Oak Brook, Ill.

Filed May 7, 1969, Ser. No.
Int. Cl. H01r *13/42*
U.S. Cl. 339—176 **8 Claims**

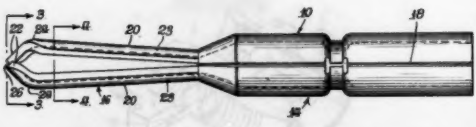


Contact unit adapted for insertion in an internal passage of a connector body and including a resilient spring metal contact engageable with a mating contact and substantially enveloped within a protective housing to prevent damage thereto. The housing, contact and terminal means are preferably integral with a metal body and formed from a one-piece sheet metal stamping.

3,581,272
MINIATURE CONNECTOR

Robert S. Yopp, Naperville, and Melvin G. Kraft, Bellwood, Ill., assignors to The Bunker-Romo Corporation, Oak Brook, Ill.

Filed Dec. 23, 1968, Ser. No. 786,189
Int. Cl. H01r *11/22*
U.S. Cl. 339—252 **5 Claims**

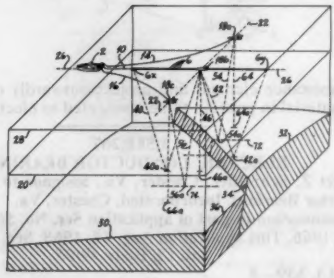


Pin contact, of a miniature connector, made as a stamping from a single piece, having a pair of cantilever contact elements together forming a pin member.

3,581,273
MARINE SEISMIC EXPLORATION

Ronald M. Hedberg, 18 Whittier St., Cambridge, Mass.

Continuation of application Ser. No. 645,643, June 13, 1967. This application Nov. 10, 1969, Ser. No. 875,510
Int. Cl. G01v *1/38*
U.S. Cl. 340—7PC **13 Claims**

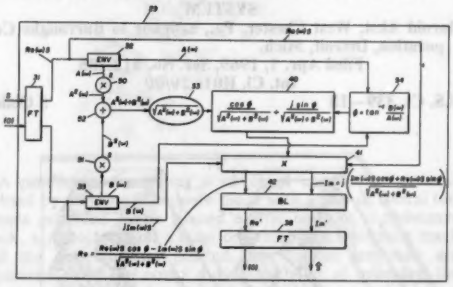


Continuous marine seismic explorations are carried out by providing echo detecting means with control means for maintaining the echo detecting means in fixed or predetermined positions and at spaced points in two dimensions of a horizontal plane, and by generating echo producing impulses at one or more spaced points located in fixed or predetermined relative positions with respect to each other and in said plane. In this way, a set of records may be obtained which define the seismic interfaces of the prospect under survey in two intersecting vertical planes. Thereafter, by producing successive sets of such records, quadratic surfaces in which the true inclinations of interfaces may be determined over an extended area are obtained in a single traverse thereof. At the same time, the accuracy of the records obtained is materially increased.

3,581,274
FREQUENCY-DOMAIN BAND BROADENING OF SEISMIC DATA

William H. Ruehle, Duncanville, Tex., assignor to Mobil Oil Corporation

Filed Mar. 19, 1969, Ser. No. 808,410
Int. Cl. G01v *1/00*
U.S. Cl. 340—15.5 **9 Claims**



The specification, in the preferred embodiment, discloses a technique for removing distortion such as multiples from seismograms by converting the traces of the seismogram by Fourier transformation into their real and imaginary parts. The envelopes of the real and imaginary parts are detected in the frequency domain and operated on to produce inverse operators which are a function of the envelopes of the real and imaginary parts. The product is formed between the real

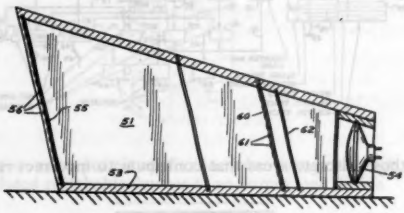
and imaginary parts of the traces and the inverse operators to remove distortion components from the real and imaginary parts of each trace. The resulting distortion-free data is transformed back into the time domain for further processing and analysis.

3,581,275

MOIRE FRINGE PRODUCING DEVICE USED FOR INTERCEPTION COURSE INDICATION

Paul S. Petersen, Minnetonka, Minn., assignor to Rosemount Engineering Company, Minneapolis, Minn.

Filed Oct. 23, 1965, Ser. No. 503,652
Int. Cl. G08g *5/00*; G64f *1/20*
U.S. Cl. 340—25 6 Claims



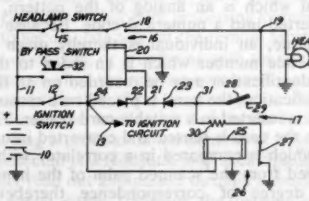
A landing aid utilizing the principle of Moire fringe patterns so that a plurality of wide light and dark bands are observed by a person using the landing aid, and when on proper course, the bands do not move, but when on other than an interception course, the bands appear to move, and such movement will be in relationship to the amount of error in the interception course.

3,581,276

VEHICLE LIGHT CONTROL AND WARNING INDICATOR SYSTEM

LaVerne R. Newman, St. Clair Shores, Mich., assignor to Essex International, Inc., Fort Wayne, Ind.

Filed Mar. 22, 1968, Ser. No. 715,314
Int. Cl. B60q *1/02*
U.S. Cl. 340—52 16 Claims



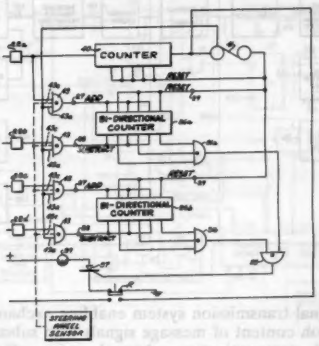
An automatic lamp disconnecting system for vehicle lighting systems having a lamp energizing circuit including a normally open relay switch in series with a manual lamp control switch. Magnetic means for closing the relay switch is energized through the vehicle ignition switch and through a separate holding circuit comprising, in series connection, the relay switch, the lamp control switch, and a normally closed thermal time delay switch which has a heating element responsive to energization of the vehicle lamp only when the ignition switch is opened to effect opening of said time delay switch a predetermined time after opening of the ignition switch.

3,581,277

TIRE INFLATION MONITORY SYSTEM

Robert D. Beatty, Jr., Gates Mills, and Thomas C. Griffiths, Chardon, both of, Ohio, assignors to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Oct. 20, 1967, Ser. No. 676,891
Int. Cl. B60c *23/00*
U.S. Cl. 340—58 18 Claims



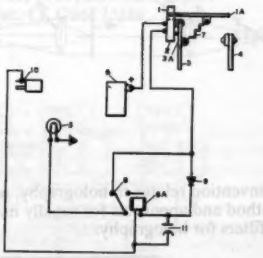
Angular movements of wheels or other objects rotating at the same surface speed are sensed as by counting revolutions of the wheels or objects with the angular movements of the wheels or objects being compared with each other or a reference to determine whether or not one wheel or object has a smaller diameter.

3,581,278

WARNING DEVICE FOR MOVING VEHICLE

Bobbie Dale Huffman, R.R.24, Box 163, Terre Haute, Ind.

Filed Sept. 23, 1968, Ser. No. 761,536
Int. Cl. B60q *1/50*
U.S. Cl. 340—62 7 Claims



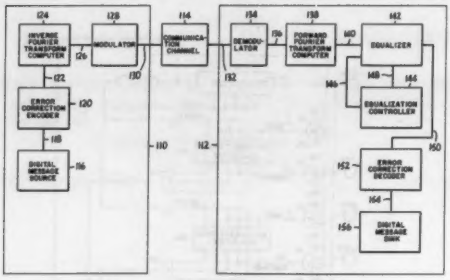
A warning device for a self-propelled vehicle comprising an air-pressure sensitive device normally inactivated by motion of the vehicle against air but becoming activated during deceleration at a speed below a predetermined speed thereby signaling others of the deceleration. The device comprises an air pressure responsive means, a microswitch, and one or a multiple of warning lamps. In a preferred embodiment a manually controlled masking means is provided whereby said air-pressure responsive means can be shielded from air pressure by operator of said vehicle. In another embodiment the warning lamps are the turn signals normally present on a vehicle and a means is provided whereby activation of the turn signals by the turn-signal lever automatically inactivates the warning device.

3,581,279

SIGNAL TRANSMISSION METHOD AND SYSTEM

Timothy Arbuckle, Montclair, N.J., assignor to Computer Modem Corporation, Ft. Lee, N.J.

Filed June 9, 1969, Ser. No. 831,293
Int. Cl. G08c 25/00; H04b 15/00
U.S. Cl. 340—146.1 14 Claims



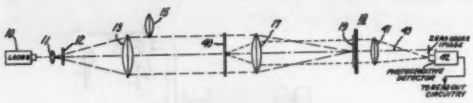
A signal transmission system enabling exchange of the information content of message signals with substantial reduction of communication channel noise effects thereof. Message signals are converted into other signals actually transmitted. Received signals are reconverted to provide said message signals, the conversion and reconversion being of such nature as to effect substantially uniform distribution of channel noise in message signals derived from said received signals.

3,581,280

HOLOGRAPHIC SPATIAL FILTERS AND METHOD OF MAKING SAME

John M. Holeman, Schenectady, N.Y., assignor to General Electric Company

Filed June 27, 1966, Ser. No. 560,418
Int. Cl. G06k 9/00
U.S. Cl. 340—146.3F 9 Claims



This invention relates to holography, and more particularly to a method and apparatus for rapidly making highly efficient spatial filters for holography.

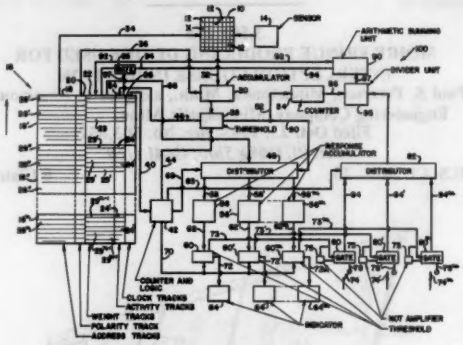
3,581,281

PATTERN RECOGNITION COMPUTER

Francis C. Martin, Williamsville, N.Y., and James P. Nicklas, Woodland Hills, Calif., assignors to Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y.

Filed Mar. 28, 1967, Ser. No. 626,495
Int. Cl. G06k 9/06
U.S. Cl. 340—146.3 5 Claims

A pattern recognition digital computer employing stores for combining the addresses of all points on an input matrix that is exposed to a pattern, the addresses being arbitrarily arranged into discrete areas of the stores, at least one predetermined weight value assigned to each of the discrete areas, threshold units for comparing the activity of each of the discrete areas with a predetermined value, response accumulators for receiving the weight values for each of the discrete areas that are above the threshold; and gates, distributors and arithmetic elements for changing the weight values for those discrete areas that contribute to incorrect responses.

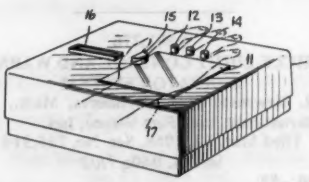


3,581,282

PALM PRINT IDENTIFICATION SYSTEM

Norman G. Altman, White Plains, N.Y., assignor to Charles H. Lipton and Michael Ebert, New York, N.Y., part interest to each

Filed Dec. 3, 1968, Ser. No. 780,768
Int. Cl. G06k 9/00
U.S. Cl. 340—149 9 Claims



A palm print identification system in which an image of the palm pattern is optically formed and scanned to generate a video signal which is an analog of the pattern, the signal being converted into a numerical code. Because each palm print is unique, an individual is thereby given a singular identifying code number which is an index to the pattern. The code identification may be recorded on an ID card. To verify identification, the hand is placed on a sensing unit and the ID card is inserted in a suitable card reader. The numerical code on the card is sensed and converted into an electrical signal which is compared in a correlator with the video signal derived from the scanned palm of the hand to determine the degree of correspondence therebetween and thereby establish identification.

3,581,283

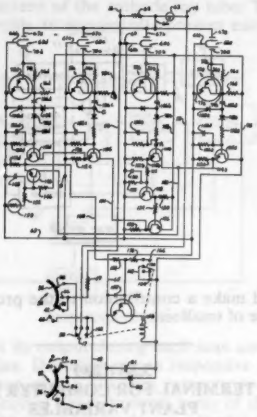
TONE DECODER RESPONSIVE TO COMBINED TONES

Robert J. Reddel, Fairborn, and Edward J. Brauner, Piqua, both of, Ohio, assignors to Ledex, Inc., Dayton, Ohio

Filed Apr. 30, 1968, Ser. No. 725,469
Int. Cl. H04m 11/02
U.S. Cl. 340—171 15 Claims

A tone decoder responsive to predetermined combinations of tones presented for predetermined time intervals comprises plural electromechanical tone detector devices coupled to interrelated switchable devices so arranged that an output function will be initiated only when the combination

and time duration of tones presented to the tone detectors satisfies the requirements of the interrelated switchable



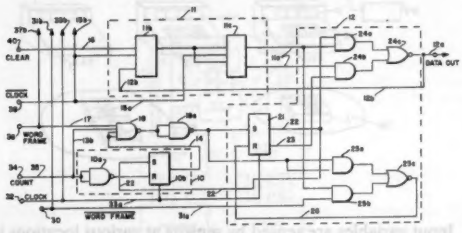
devices so as to permit application of a voltage through the interrelated switchable devices to an output load device.

3,581,284

RANDOMLY ACCESSED NON-INTERFERING INPUT-OUTPUT DATA ACCUMULATOR

Ronald B. Selden, North Hollywood, Calif., assignor to T R W Inc., Redondo Beach, Calif.

Filed June 3, 1968, Ser. No. 734,091
Int. Cl. G06c *25/02*
U.S. Cl. 340—172.5 **5 Claims**



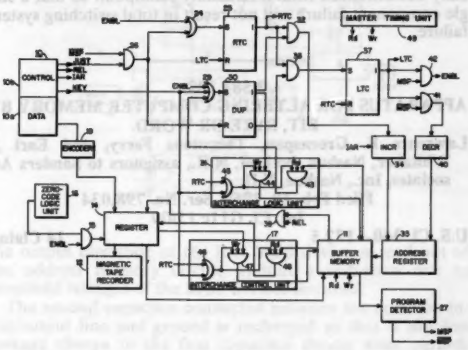
There is disclosed a data accumulator suitable for use in oil field supervisory control systems or, more generally, in various process control or other data processing systems wherein it is desired to accumulate total at the remote location at any time without destroying or interfering with the accumulating total regardless of when the readout command is received. In order to accomplish this, there is provided a shift register adapted to contain the total count data in the form of a binary word having a predetermined number of bits. The shift register is connected in a feedback loop such that its contents may be serially read out and passed through a specialized adding circuit which either transmits the register content in unchanged form or adds one to the total content depending upon whether the adding circuit has been actuated by receipt of an add command from a bistable input buffer means which receives the input unit event counting pulse. The output of the adding circuit is applied as feedback to the input of the shift register in such a fashion that the register content is continuously circulating. The timing parameters of the circuit are chosen so that the total duration of the input unit event count pulse is greater than the total time duration of the complete work content of the shift register. On this basis, the adding circuit logic can be shown to produce a correct and unambiguous result regardless of when the input pulse arrives or when a readout is desired. The online readout is, of course, taken from the adding circuit.

3,581,285

KEYBOARD TO MEMORY PERIPHERAL DEVICE

Farid J. Neema, Sudbury, and Robert C. Engelhardt, Watertown, both of, Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 20, 1968, Ser. No. 777,442
Int. Cl. G06f *13/00, 3/10*
U.S. Cl. 340—172.5 **12 Claims**



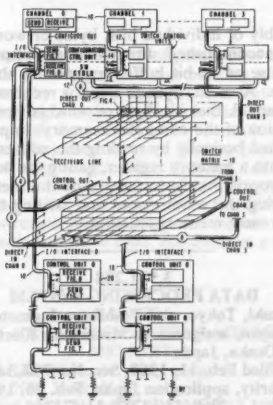
A data recording device is disclosed for entering data into a memory field via a keyboard and for right justifying the entered data in the memory field. The device includes a keyboard with which data is entered, a buffer memory and register that assemble and right justify the data; and a file memory, such as a magnetic tape recorder into which the data is finally recorded. Flag bits stored in the buffer memory, each one associated with a data character, are used for housekeeping purposes to keep track of the location of selected data and to control the right justification sequencing.

3,581,286

MODULE SWITCHING APPARATUS WITH STATUS SENSING AND DYNAMIC SHARING OF MODULES

William F. Beausoleil, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 13, 1969, Ser. No. 790,681
Int. Cl. G06f *15/16*
U.S. Cl. 340—172.5 **17 Claims**



An input/output interface switching apparatus for switching I/O interfaces connecting I/O control units between

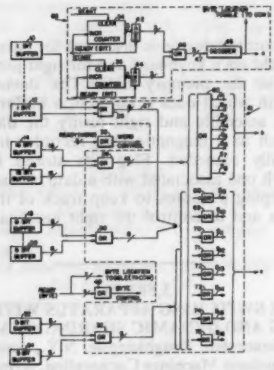
channels. The I/O interface switching apparatus provides means for attaching one or more strings of control units to one or more channels and provides a means for switching these strings of control units between the channels under configuration control. The switching apparatus is so arranged that a single failure within one interface affects at most only the channel to which the interface is associated. A switching matrix is provided, within the apparatus, which is physically centralized to minimize the number of I/O interface cables and connectors. The switching functions are, however, logically decentralized from a reliability standpoint so that a single component failure will not result in total switching system failure.

3,581,287

APPARATUS FOR ALTERING COMPUTER MEMORY BY BIT, BYTE OR WORD

Lawrence E. Greenspan, Thorntons Ferry, and Earl J. Whitaker, Nashua, both of, N.H., assignors to Sanders Associates, Inc., Nashue, N.H.

Filed Feb. 10, 1969, Ser. No. 798,034
Int. Cl. G11c *15/00*
U.S. Cl. 340—172.5 **14 Claims**



The assembly of individual bits, bytes or words into a 16-bit word is accomplished directly in a computer memory without the use of 16-bit buffer registers in the bit or byte data channels. As a bit, byte or word is received by an input computer channel, that bit, byte or word is stored in the addressed location of the computer memory. In particular, this is accomplished basically by reading the addressed word out of memory into a memory register, gating the new bit or byte into the appropriate stage or stages of the memory register without altering the other stages and writing the new word back into the same memory location.

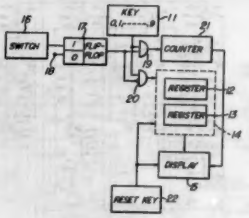
3,581,288

DATA PROCESSING SYSTEM

Yoshiaki Suzuki, Tokyo, and Toshiharu Inamoto, Yokohama, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 11, 1969, Ser. No. 798,342
Claims priority, application Japan, Feb. 28, 1968, June 4, 1968, 43/13227; 43/47374
Int. Cl. G06f *3/00, 7/38*
U.S. Cl. 340—172.5 **4 Claims**

A data processing system in which an arithmetic operation and the setting of a decimal point are carried out by a command entered from entry digit keys to thereby facilitate the setting of the specified decimal point and the starting of computation and make a contribution to the provision of a simplified device of small size.

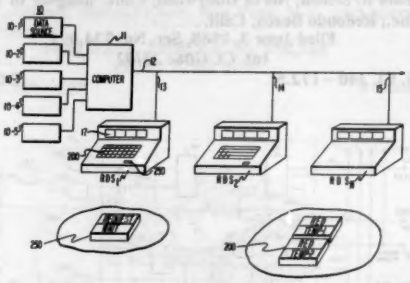


3,581,289

DISPLAY TERMINAL FOR COMPUTER MONITORED PLANT VARIABLES

D. F. Wilhelm, Toledo; Peter S. Miller, Toledo; D. L. Bissell, Toledo, and George M. Lambroff, Swanton, all of, Ohio, assignors to Owens-Illinois, Inc.

Filed Apr. 28, 1969, Ser. No. 819,701
Int. Cl. G06f *3/00*; G06c *21/00*
U.S. Cl. 340—172.5 **13 Claims**



Input variables are sensed by sensors at various locations in a manufacturing facility and supplied as raw data to a computer which may or may not perform calculations on the data supplied thereto. Data from the computer is presented on a time sharing basis to a plurality of remotely located data display terminals. Each data display terminal is equipped with a plurality of manually actuated data selection units having identifying indicia and a numerical display displaying data from the computer corresponding to the requested indicia of an actuated data selection unit along with data indicating trend of the variable relative to a standard or reference value. The communication link between the computer and the display terminals may be conventional wiring with data lines common to each display terminal and individual lines for achieving connection to the computer and the display terminal being individual to the display terminals. Consult the specification for further features and details.

3,581,290

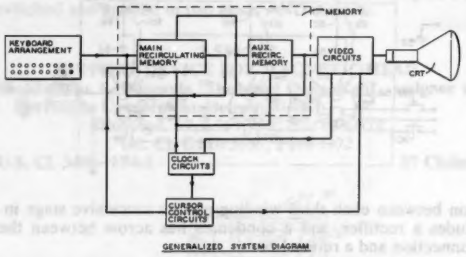
INFORMATION DISPLAY SYSTEM

Robert Sugarman, New York, N.Y., assignor to Sugarman Laboratories, Inc., Great Neck, N.Y.

Filed June 3, 1969, Ser. No. 830,032
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **31 Claims**

A system for the display of information on a cathode-ray tube or the like wherein the information comprises a plurality of lines of text comprising a number of characters and wherein each text line is formed by a plurality of scans. The system comprises a main memory for storing sets of bits

wherein each set of bits represents a different one of all the characters to be displayed and an auxiliary memory for storing the sets of bits comprising the particular text line being formed on the screen of the cathode-ray tube. The auxiliary memory is operable to sequentially present each set of bits



GENERALIZED SYSTEM DIAGRAM

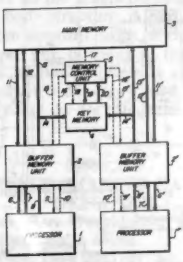
stored therein at its output during each scan comprising the particular text line. Decoding means responsive to the set of bits of the output of the auxiliary memory is provided to modulate the electron beam to form areas of the character represented by the set of bits during a particular scan.

3,581,291

MEMORY CONTROL SYSTEM IN MULTI-PROCESSING SYSTEM

Shoji Iwamoto, Totsuka-ku, and Hisashi Horikoshi, Tachikawa-shi, both of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 29, 1969, Ser. No. 872,164
Claims priority, application Japan, Oct. 31, 1968, 43/79555
Int. Cl. G06f *15/16*
U.S. Cl. 340—172.5 **13 Claims**



A multiprocessing system comprises two processors and a main memory to be utilized by the processors in common. Each processor is provided with a buffer memory which stores information read from the main memory, block by block, and the main memory is provided with a key memory which stores an indicator indicating whether or not information in the main memory is read out and stored in each processor at each predetermined amount of its capacity (sector). When one of the processors carries out a writing in a sector of the main memory, whether or not the information of the sector is stored in the other processor is checked. When the information is stored, the address of the information is supplied to the other processor to invalidate the corresponding sector of the buffer memory. In this manner, the incoincidence between the stored contents of the main memory and buffer memory is prevented.

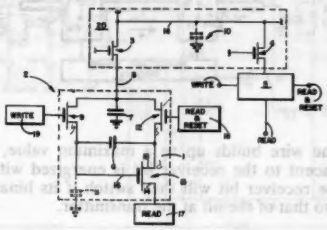
3,581,292

READ/WRITE MEMORY CIRCUIT

Robert W. Polkinghorn, Huntington Beach, Calif., assignor to North American Rockwell Corporation

Filed Jan. 7, 1969, Ser. No. 789,455
Int. Cl. G11c *11/24, 7/00*
U.S. Cl. 340—173R **11 Claims**

Two capacitors of an addressed memory circuit are charged during a write period to a potential representing a logical state. The first capacitor is connected between the output electrode and the control electrode of the MOS device for turning the MOS device on as a function of the logical state of the capacitor. When the input signal is true, during a read period, the voltage on the output electrode of the MOS device is fed back through the first capacitor for increasing the voltage. As a result, the output voltage is driven to a voltage which overcomes the threshold drop through the device. Another MOS device having a relatively larger control voltage is turned on so that the read signal appearing at



the output electrode of the first MOS device is read out of the address memory circuit without a reduction due to threshold voltages of the MOS devices involved.

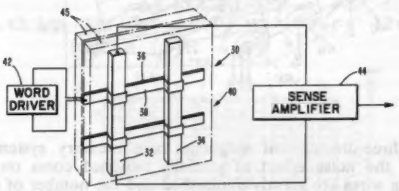
The second capacitor connected between the common input/output line and ground is recharged so that it supplies leakage charge to the first capacitor during write periods when the circuit is not addressed. It is conditionally reset to ground between read and write periods to prevent reading of erroneous information.

3,581,293

FORM OF PLATED WIRE MEMORY DEVICE

George A. Fedde, Norristown, and John Presper Eckert, Jr., Gladwyne, both of, Pa., assignors to Sperry Rand Corporation, New York, N.Y.

Continuation of application Ser. No. 241,368, Nov. 30, 1962, now abandoned. This application Nov. 8, 1967, Ser. No. 681,598
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 **9 Claims**



This invention relates to a configuration of a plated wire memory device which permits closer packing of the bits. This is accomplished by using a memory element which has a cross section having a major and minor axis. The forward and return portions of the memory drive which are arranged orthogonally to the plated wire are thereby positioned closer to one another. By reducing the distance (d) between the drive portions, the width (w) thereof can correspondingly be reduced. Reducing (d) and (w) reduces the drive current for a given field strength and for a given amount of interaction between two adjacent drive lines, the distance p can be made smaller.

3,581,294

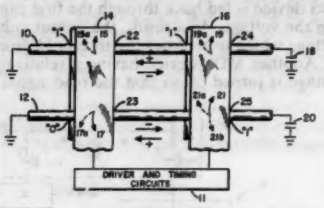
TUNED PLATED WIRE CONTENT ADDRESSABLE MEMORY

William J. Bartik, Wyncote, Pa., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 11, 1968, Ser. No. 712,108
Int. Cl. G11c *11/14, 15/00*
U.S. Cl. 340—174 **4 Claims**

A wire element is electrically tuned so that it operates with a low impedance. Bit information is then readily transferred

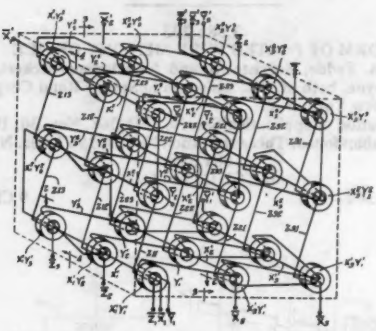
along the wire from one location (sender) to another location (receiver) by energizing the drive strap adjacent the sending bit with a burst of pulses. When the circulating current in the wire builds up to a maximum value, the drive strap adjacent to the receiver bit is energized with a single pulse. The receiver bit will then switch if its binary state is opposite to that of the bit at the transmitter.



3,581,295
MAGNETIC CORE MEMORY ARRAY

Peter A. Denes, 9101 Crestwood Ave. N.E., Albuquerque, N. Mex.

Division of Ser. No. 352,919, Mar. 18, 1964, Pat. No. 3,435,518.
Filed Jan. 29, 1969, Ser. No. 822,337
Int. Cl. G11c *5/06, 11/06*
U.S. Cl. 340—174NC **8 Claims**



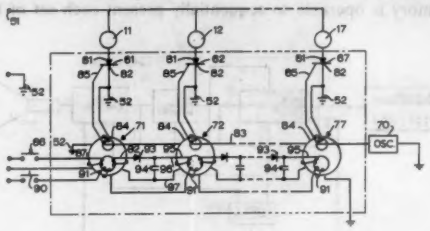
A three-dimensional magnetic core memory system in which the noise effect of partially switched cores on the sensing wires are greatly diminished and the number of connecting points in the system is minimized.

3,581,296
SHIFT REGISTER

William Brooks, 1042 Inverness Way, Sunnyvale, Calif.

Continuation-in-part of application Ser. No. 810,434, Feb. 4, 1969, now Patent No. 3,493,933, which is a division of application Ser. No. 557,148, June 13, 1966, now Patent No. 3,493,957. This application Nov. 17, 1969, Ser. No. 877,069
Int. Cl. G11c *11/08, 19/00;* H03k *23/32*
U.S. Cl. 340—174SR **2 Claims**

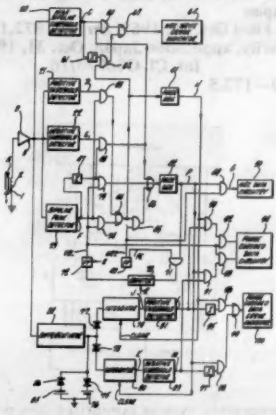
An electronic shift register used with a source of rectified alternating current, having a positive bus and a ground. A series of shift register stages are serially arranged between a first stage and a last stage, each stage having a silicon controlled rectifier and a transfluxor core associated together. Each silicon controlled rectifier has its cathode connected to ground, and a load is connected between its anode and the positive bus. Each transfluxor has a core and a primary connected to an oscillator and actuated thereby, a secondary connected to the gate of its associated silicon controlled rectifier, and first and second windings; each transfluxor except the one at the last stage has a third winding connected to the second winding of the succeeding stage. A shift control switch is connected in series with each of the first windings, and data input means is connected to the second winding of the first stage for feeding binary data thereto. The connection between each third winding and its successive stage includes a rectifier, and a condenser lies across between the connection and a return line.



3,581,297
BINARY DATA HANDLING SYSTEM

Michael I. Behr, South Pasadena; Lewis B. Coon, Jr., Pasadena, and Charles E. Bickel, West Covina, all of, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sept. 18, 1967, Ser. No. 668,529
Int. Cl. G11b *5/02, 5/44*
U.S. Cl. 340—174.1 **9 Claims**



A system for reading binary data recorded on a storage medium as magnetic tape in either of several coding techniques. Specifically, the system is capable of reading either phase encoded data or data recorded in the form of nonreturn-to-zero pulses in which one binary value is represented by a flux reversal in a bit cell and the other binary value is represented by the absence of a flux reversal in a bit cell (hereafter called modified NRZ). A positive threshold detector, a negative threshold detector, and a bipolar peak detector are utilized for recovering the NRZ data and part of the preamble of the phase encoded data. The bipolar peak detector is also employed in the recovery of the phase encoded data itself. To recover the NRZ data and the preamble of the phase encoded data, the output of the positive threshold detector and the bipolar peak detector are combined in one AND circuit and the output of the negative threshold detector and the inverse output of the bipolar peak detector are combined in another AND circuit. To recover the phase encoded data, a signal representing the peak-to-peak amplitude of the read head signal is produced by differentiating it and then separately integrating the two half-cycles of the differential signal. The maximum amplitude of the differentiated signal is limited to suppress noise. The integrated signals are applied to a positive threshold detector

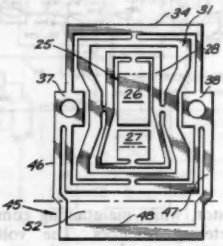
and a negative threshold detector, respectively. The output of the positive threshold detector is combined with the output of the bipolar peak detector in one AND circuit and the output of the negative threshold detector is combined with the inverse of the output of the bipolar peak detector in another AND circuit to recover the phase encoded data. To check for errors in the phase encoded data, these outputs are switched and applied to two other AND circuits.

3,581,298

SUPPORT DEVICE FOR MAGNETIC HEAD

Shahbuddin A. Billawala, Thousand Oaks, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 17, 1969, Ser. No. 816,979
Int. Cl. G11b 5/60; F16f 1/02
U.S. Cl. 340—174.1 **27 Claims**



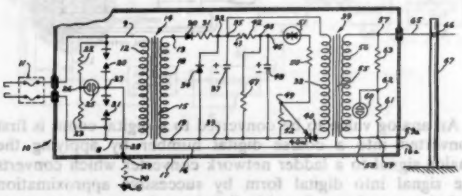
A support device for floating a magnetic head on a fluid atmosphere adjacent a recording surface has several features in a one piece construction. The support device is a substantially flat, thin body structure of elastic material having perforations therein positioned and shaped to form a platform to which a magnetic head is bonded. A portion of the platform is permanently deformed to lie forward of the remainder of the body structure so the magnetic head is spaced from the remainder of the body structure. A pair of mounting tabs extend inwardly from opposite sides of the outer perimeter of the support device. The portions of the support device adjacent to the tabs are bowed inwardly away from the tabs. A cable support bracket is directly joined to the tabs so forces exerted on the bracket do not effect the position of the magnetic head.

3,581,299

ELECTRIC FENCE CHARGER HAVING GROUND DETECTOR

Wilfred W. Schmit, Port Washington, Wis., assignor to Flo-Tronics, Inc., Minneapolis, Minn.

Filed Nov. 19, 1968, Ser. No. 777,040
Int. Cl. G08b 21/00; H05c 1/04; A01b 3/00
U.S. Cl. 340—254 **10 Claims**



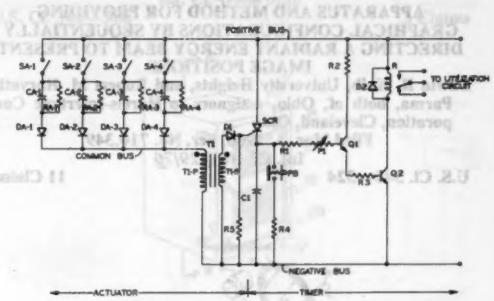
An electric fence charger that is energized from a utility power supply wherein one utility supply line is grounded, said charger having a circuit to provide, in respect to a separate ground connection of said charger, high voltage energy impulses of short duration and a ground detector circuit to provide a visual indication when the fence charger ground does in fact not adequately connect the charger to ground. The ground detector circuit includes a pair of resistors connected in series across the primary winding or a center tapped primary winding of a transformer forming a part of the charger and connected to the utility power supply, and indicating means, such as a neon light, connected between the adjacent ends of said resistors or center tap and the charger ground terminal.

3,581,300

ELECTRONIC ACTUATOR AND TIMER CIRCUIT

Walter G. Eloranta, 1719 Vermont Ave., Fort Wayne, Ind.

Filed July 19, 1968, Ser. No. 746,158
Int. Cl. G08b 23/00
U.S. Cl. 340—309.1 **4 Claims**



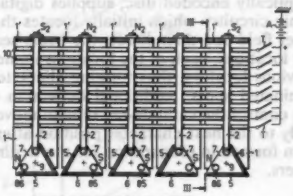
A number of actuator circuits, each having a switch and a capacitor connected in series, are connected to a transformer primary winding. The transformer secondary winding is coupled to a controlled rectifier having a timer capacitor connected to its anode-cathode path. An output circuit is coupled to the timer capacitor. Closing of any one of the switches renders the controlled rectifier conductive to charge the timer capacitor, after which the controlled rectifier is turned off so as to be responsive to closing of another switch. The output circuit produces a signal as long as the timer capacitor has a charge.

3,581,301

DISPLAY ARRANGEMENT FOR SYMBOLS

Theo Stutz, Bassersdorf, and Werner Mueller, Aarau, both of, Switzerland, assignors to A. G. Contraves, Zurich, Switzerland

Filed Oct. 24, 1967, Ser. No. 677,801
Claims priority, application Switzerland, Oct. 24, 1966, 15399/66
Int. Cl. G09f 9/30
U.S. Cl. 340—324 **12 Claims**



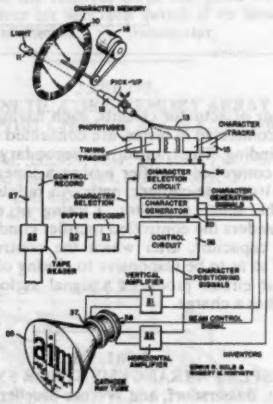
A display arrangement for displaying any desired symbol in an arbitrary manner in any desired sequence. The display is in the form of a grid pattern in which the grid areas confined by the lines and columns of the grid are either of one visual surface or another visually contrasting surface. The surfaces are flipped from one to the other through the application of a magnetic actuating device. The actuating device supports the visually contrasting surfaces and includes two permanent magnetic discs mounted in a plane perpendicular to the axis of movement or rotation about which the device moves in flipping from one display surface to the other. The permanent magnets operate in conjunction with an electromagnet which generates a field directed through an airgap. When the direction of the magnetic field is in one sense, one of the two permanent magnetic discs is attracted into the airgap while the other is repelled. When the direction of the magnetic field is reversed, the action upon the permanent magnetic discs is correspondingly reversed and the actuating device is moved so as to display the appropriate visual sur-

face. By energizing the electromagnet with current in the proper direction, a particular area within the grid pattern may be made of one or the other contrasting surface and as a result any desired symbol may be displayed.

3,581,302
APPARATUS AND METHOD FOR PROVIDING GRAPHICAL CONFIGURATIONS BY SEQUENTIALLY DIRECTING A RADIANT ENERGY BEAM TO PRESENT IMAGE POSITIONS

Edwin R. Kolb, University Heights, and Robert M. Horvath, Parma, both of, Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed Mar. 4, 1968, Ser. No. 710,349
Int. Cl. H01j *29/70*
U.S. Cl. 340—324 **11 Claims**



A phototypesetting system employs a cathode-ray tube to present characters of typesetting quality wherein each of the characters displayed is generated by directing the cathode-ray tube beam to a series of locations, each immediately adjacent its previous location, where the beam is energized for a predetermined period of time. A character memory, such as an optically encoded disc, supplies digital information to electronic circuitry which initially locates the beam within a character field and then directs the beam sequentially to additional locations, each of the locations immediately adjacent the previous location, thus forming characters from a series of illuminated spots. Additional deflection signals are supplied to control the cathode-ray tube to move the beam automatically to the next character position after each character has been formed in preparation for the writing of subsequent characters.

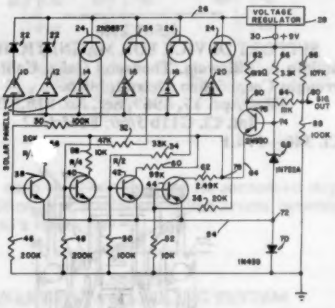
3,581,303
DIGITAL TO ANALOG CONVERTER

Franklin G. Kelly, Long Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Oct. 6, 1967, Ser. No. 673,425
Int. Cl. H03k *13/02, 13/04*
U.S. Cl. 340—347 **3 Claims**

A digital to analog converter includes a plurality of parallel connected circuits, each of which has a switching transistor in series with a calibrating or metering resistor. The metering resistors have resistance values that differ from each other by a multiple of two. The switching transistors each have an input terminal for reception of a digital input signal that switches the transistor on. When a transistor is switched on a current is produced that is proportional to the resistance value of the metering resistor in that particular circuit.

The currents are summed in a summing transistor and a summing resistor that are connected in series with the parallel connected circuits. The summing transistor is provided with means for clamping its emitter voltage on the base thereof. The different currents flowing through the summing transistor and summing resistor produce changes in the voltage across the summing transistor that are compensated by changes in the voltage across the emitter-collector of the

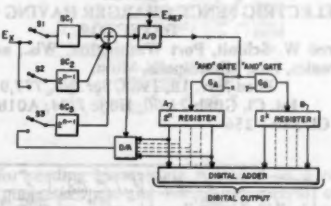


summing transistor, while maintaining constant the voltage across the metering resistors. The voltage across the summing resistor is thereby a function only of the resistance values of the metering resistors.

3,581,304
ANALOG-TO-DIGITAL CYCLIC FORWARD FEED SUCCESSIVE APPROXIMATION CONVERSION EQUIPMENT

Ronald Y. Paradise, Hillsdale; Marvin Masel, W. Englewood; Bob N. Naydan, Oakland, and John D. Brinkman, Pine Brook, all of, N.J., assignors to Singer-General Precision, Inc., Little Falls, N.J.

Filed May 16, 1967, Ser. No. 638,846
Int. Cl. H03k *13/14*
U.S. Cl. 340—347 **2 Claims**

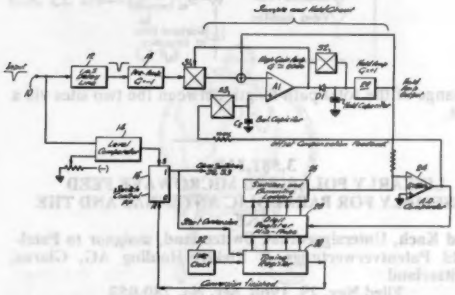


An analog value to be converted to a digital count is first converted into a coarse digital number by applying the analog signal to a ladder network converter which converts the signal into digital form by successive approximation techniques and transfers this digital number to an output register. The value of the number in the register is also reconverted back to analog form by a summing network and subtracted from the original analog signal. The difference between the original and the reconverted values is then amplified by a proper scale factor and again converted to obtain a second digital number in the same converter. The most significant digits of the second digital number are then compared with the corresponding least significant digits of the first number by logic means and the two numbers are then properly consolidated into one number, in a form suitable for use by external equipment, which represents the input analog value with an accuracy higher than that inherent in the analog-to-digital converter being used.

3,581,305
SEQUENTIAL APPROXIMATION PULSE HEIGHT ANALOG-TO-DIGITAL CONVERTER

Donald L. Howlett, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed July 17, 1968, Ser. No. 745,642
Int. Cl. H03k 13/14
U.S. Cl. 340—347 5 Claims

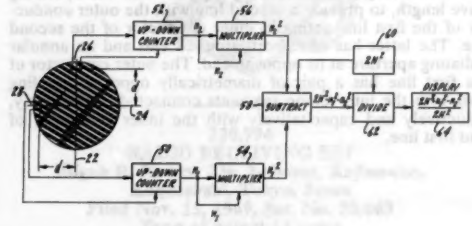


A sequential approximation pulse height analog-to-digital converter including a sample and hold circuit. The converter, including the sample and hold circuit, substantially reduces the "dead time" heretofore required to discharge or step down a capacitor retaining a peak voltage value.

3,581,306
TRIGONOMETRIC ENCODER

Clark E. Johnson, Jr., 60 Pinecroft Road, Weston, Mass.

Continuation-in-part of application Ser. No. 515,895, Dec. 23, 1965, now abandoned. This application Aug. 8, 1969, Ser. No. 848,534
Int. Cl. G08c 9/06
U.S. Cl. 340—347 10 Claims

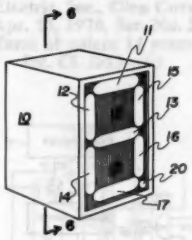


In a trigonometric encoder for providing a digital indication of a trigonometric function of the angle of rotation of a shaft. A rotatable disc, attached to the shaft, whose rotation is to be measured, has alternate lines of differing flux transmissive ability, which lines are parallel with each other and with the diameter of the disc. There are two sources of flux on one side on the disc and two detectors on the opposite side. Each of the detectors is aligned with its source of flux and is arranged to detect the number of times the lines interrupt the flux from the source during rotation of the disc. The number of detected interruptions along with the number of lines are utilized to provide a trigonometric indication of the angle of rotation of the disc.

3,581,307
DIRECT VIEW HIGH INTENSITY READOUT MODULE HAVING CONICAL LIGHT CONVEYOR TUBE

Jack D. McKim, P. O. Box 149, Del Mar, Calif., and Harold W. Ulmer, 2941 San Luis Rey, Oceanside, Calif.

Filed May 29, 1968, Ser. No. 733,156
Int. Cl. G08b 5/36
U.S. Cl. 340—366 3 Claims

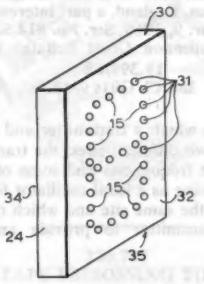


A direct view high intensity readout module primarily designed for seven segment digital readout systems in which seven incandescent bulbs are connected to a different pin of a nine terminal vacuum tube base, one of the terminals being common and one of the terminals preferably being coupled for a period indication. A light conveyor tube surrounds each of the incandescent bulbs on one end, the other end forming a segment of the seven segment numerical readout. A heat sink is in physical contact with each of the seven light conveyor tubes. A nonglare frosted face plate is cemented over the segment end of the light conveyor tubes.

3,581,308
LIGHT GUIDE CHARACTER FORMING MASK AND DISPLAY DEVICE CONTROL ELEMENT

Joseph T. McNaney, 8548 Boulder Drive, La Mesa, Calif.

Filed Apr. 11, 1969, Ser. No. 815,374
Int. Cl. G08b 5/00; G09f 9/30
U.S. Cl. 340—380 7 Claims



The specification discloses a light guide character forming mask assembly, including means for fashioning such assemblies, and means for utilizing the assembly as a character forming and light control element in various types of light emitting and light gate display devices.

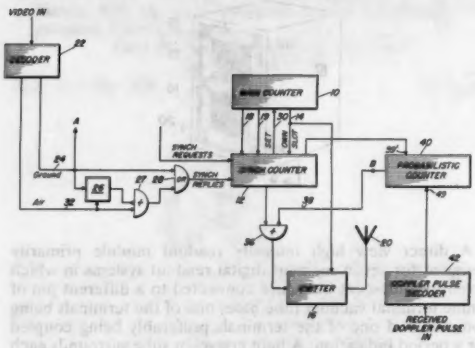
3,581,309
CLOCK SYNCHRONIZATION WITHOUT ADDRESSING FOR COLLISION AVOIDANCE SYSTEMS

Wayne G. Shear, Pompano Beach, Fla.; Merlin E. Olmstead, Baltimore, Md., and Samuel R. Everett, Fort Lauderdale, Fla., assignors to The Bendix Corporation

Filed Sept. 16, 1968, Ser. No. 759,966
Int. Cl. G01s 9/56
U.S. Cl. 343—6.8 11 Claims

A means of synchronizing clocks without addressing within a cooperative collision avoidance system which utilizes the

time slot of the aircraft requesting synchronization. During its time slot, an aircraft transmitting a collision avoidance message automatically requests clock synchronization. All other aircraft within the collision avoidance network which receive the synchronization request will respond in a random manner with a probability inversely proportional to the number of potential responding aircraft within the collision



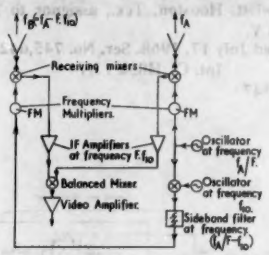
avoidance network. To accomplish this each cooperating aircraft is equipped to monitor the number of occupied time slots so as to determine the number of potential responding aircraft, determines the probability of its response with respect thereto and determines in accordance with the probability thus derived whether it should respond to this particular synchronization request.

3,581,310
RADAR SYSTEMS

Trevor Buckley, Malvern, England, assignor to Frowds Limited, Teddington, England, a part interest

Filed Apr. 9, 1969, Ser. No. 814,529
Claims priority, application Great Britain, Apr. 24, 1968, 19,399/68
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 5 Claims

A radar system in which a transmitter and a receiver are located at each of two different sites, the transmitters being operated at different frequencies and some of the power of each transmitter serving as a local oscillator for the receiver which is located on the same site and which receives signals from the other transmitter to provide an intermediate frequency output, the two intermediate frequency outputs being mixed to provide a signal dependent only upon the rate

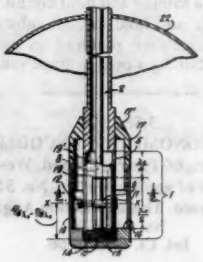


of change of the total path length between the two sites via a target.

3,581,311
LINEARLY POLARIZED MICROWAVE FEED ASSEMBLY FOR PARABOLIC ANTENNAS AND THE LIKE

Alfred Kach, Untersiggenthal, Switzerland, assignor to Patelhold Patentverwertungs & Elektro-Holding AG, Glarus, Switzerland

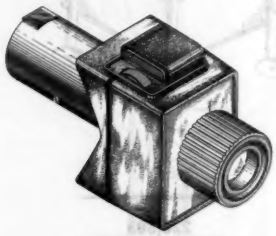
Filed Nov. 29, 1968, Ser. No. 780,052
Claims priority, application Switzerland, Dec. 1, 1967, 16921
Int. Cl. H01q 19/14
U.S. Cl. 343—781 6 Claims



A first coaxial line, short-circuited at one end and propagating a TEM wave, is surrounded by a concentric sleeve of a length approximately equal to half the operating wave length, to provide a second line with the outer conductor of the first line acting as inner conductor of the second line. The latter has one short-circuited end and an annular radiating aperture at its opposite end. The outer conductor of the first line has a pair of diametrically opposed coupling slots with the intervening segments connected, respectively, inductively and capacitatively with the inner conductor of said first line.

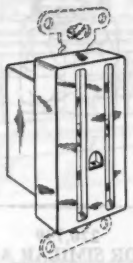
220,792
COMBINED BOTTLE AND STAND THEREFOR
Lee Benson, 5 Horseshoe Lane, Port Chester, N.Y. 10573
Filed Apr. 13, 1970, Ser. No. 22,409
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—13

220,793
FILM STRIP ADAPTER FOR PHOTOGRAPHIC PROJECTOR
Peter T. Quinn, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.
Filed June 22, 1970, Ser. No. 23,591
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D61—1



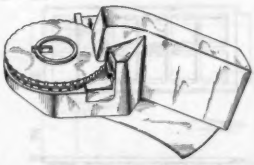
220,794
RADIO RECEIVING SET
Eligah R. Rowry, 236 2-chome, Kajino-cho, Koganei-shi, Tokyo, Japan
Filed Nov. 13, 1969, Ser. No. 20,063
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4

220,795
SINGLE ELECTRICAL OUTLET
Herbert A. Slater, New York, N.Y., assignor to Slater Electric, Inc., Glen Cove, N.Y.
Filed Apr. 13, 1970, Ser. No. 22,380
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1



220,796
EDUCATIONAL DEVICE
Teruo Matsumoto, Tokyo, Japan, assignor to Epoch Company, Ltd., Tokyo, Japan
Filed July 14, 1970, Ser. No. 23,941
Claims priority, application Japan Mar. 30, 1970
Term of patent 14 years
Int. Cl. D19—*08*
U.S. Cl. D25—1

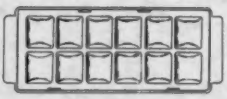
220,797
TAPE EMBOSSING TOOL
William A. Penaluna, Pinole, and Melvin Yee, San Francisco, Calif., assignors to Dymo Industries, Inc., Emeryville, Calif.
Filed Mar. 19, 1970, Ser. No. 21,979
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D64—10



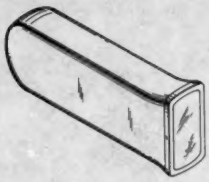
220,798
BOTTLE
Jacques Leonard, 7 Boulevard Richard Wallace, Neuilly-sur-Seine, Hauts-de-Seine, France
Filed May 27, 1969, Ser. No. 17,383
Claims priority, application France Nov. 27, 1968
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—71

220,799
PLATE OR SIMILAR ARTICLE
Johann Martin Stangl, Flemington, N.J., assignor to Stangl Pottery, Trenton, N.J.
Filed Feb. 4, 1970, Ser. No. 21,271
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15

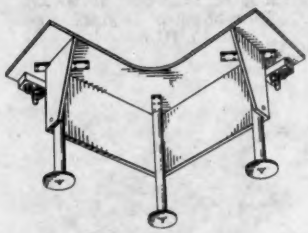
220,800
ICE TRAY
Johannes Christoffel Krogh, 6 Janie St., Walhuter, Johannesburg, Transvaal, Republic of South Africa
Filed Apr. 23, 1970, Ser. No. 22,603
Term of patent 14 years
Int. Cl. D15—*11*
U.S. Cl. D67—3



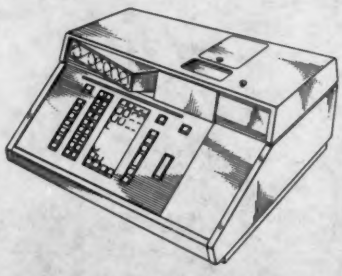
220,801
FLASHLIGHT
Dieter Rams, Koenigstein, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed Jan. 15, 1969, Ser. No. 15,368
Claims priority, application Germany July 15, 1968
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D48—24



220,802
WORK BENCH
James Hedges and Douglas Frank Edwards, Bracknell, England, assignors to The Barden Corporation (U.K.) Limited, Bracknell, England
Filed Aug. 29, 1969, Ser. No. 18,928
Claims priority, application Great Britain Mar. 11, 1969
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—14



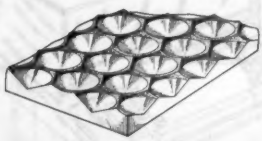
220,803
SALES TERMINAL
Ronald Segall, Los Angeles, Calif., assignor to Scantlin Electronics, Inc., Los Angeles, Calif.
Filed Feb. 20, 1970, Ser. No. 21,552
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



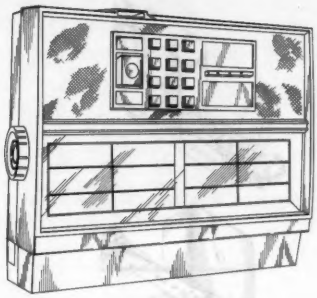
220,804
BUILDING
Danny W. Evins, Lebanon, Tenn., assignor to Consolidated Oil Company, Inc., Lebanon, Tenn.
Filed Jan. 9, 1970, Ser. No. 20,874
Term of patent 14 years
Int. Cl. D25—*04*
U.S. Cl. D13—1

220,805
INHALANT DISPENSER
John V. Ryden, Summit, N.J., assignor to Schering Corporation, Bloomfield, N.J.
Filed Dec. 10, 1969, Ser. No. 20,426
Term of patent 14 years
Int. Cl. D24—*05*
U.S. Cl. D83—1

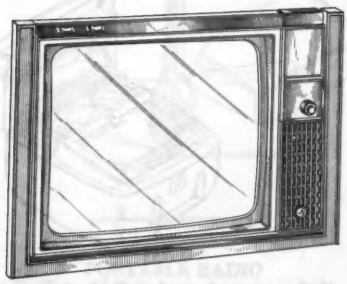
220,806
DIFFUSER FOR A LIGHTING FIXTURE
Richard W. Carroll, Los Angeles, Calif., assignor to U.S. Industries, Inc., New York, N.Y.
Filed Sept. 4, 1969, Ser. No. 19,017
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—16



220,807
REMOTE CONTROL UNIT FOR AN AUTOMATIC PHONOGRAPH
Carl W. Sundberg, Bloomfield, Mich., assignor to Walter E. Heller & Company, Chicago, Ill.
Filed Sept. 4, 1969, Ser. No. 19,008
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13

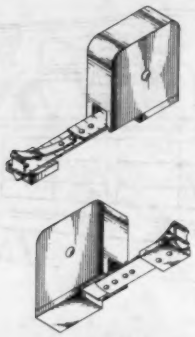


220,808
TELEVISION RECEIVER ESCUTCHEON
Richard K. Althans, Mardan Woods, R.R. 2, Long Grove, Ill. 60047, and Bernard B. Bluestein, 8816A Dee Road, Des Plaines, Ill. 60016
Filed May 27, 1969, Ser. No. 17,377
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4

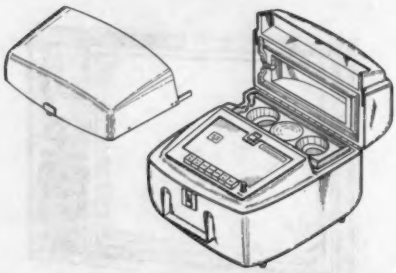


220,809
TOASTER
Don C. Krammes, Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed Mar. 24, 1970, Ser. No. 22,037
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D81—10

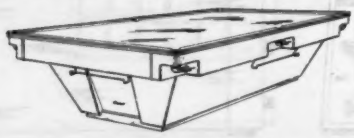
220,810
MAGNETIC MEASURING TAPE
Lloyd J. Le Roue, Rte. 2, P.O. Box 2360, Wapato, Wash. 98951
Filed Nov. 24, 1969, Ser. No. 20,254
Term of patent 14 years
Int. Cl. D10—*08*
U.S. Cl. D52—1



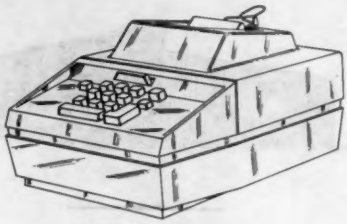
220,811
TELEPHONE COUPLER
Charles Jerabek, Bay Shore, N.Y., assignor to Vernitron Corporation, New York, N.Y.
Filed July 8, 1969, Ser. No. 18,583
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



220,812
BILLIARD TABLE OR SIMILAR ARTICLE
Jeffrey Frank Harrison, Forton, near Preston, England, assignor to E. J. Riley Limited, Accrington, England
Filed Aug. 11, 1969, Ser. No. 18,640
Claims priority, application Great Britain Dec. 19, 1968
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—3

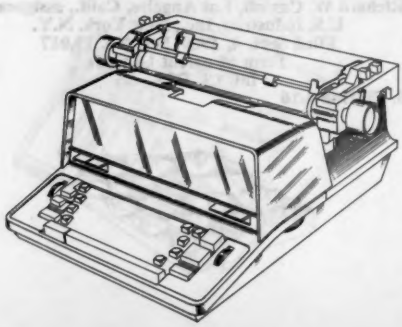


220,813
ADDING MACHINE OR THE LIKE
Carl L. Otto, New York, N.Y., assignor to Litton Business Systems, Inc., New York, N.Y.
Filed Apr. 23, 1970, Ser. No. 22,578
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11

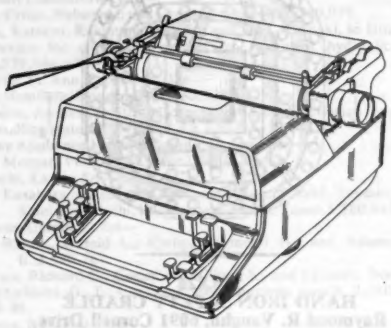


220,814
ADDING MACHINE OR THE LIKE
Carl L. Otto, New York, N.Y., assignor to Litton Business Systems, Inc., New York, N.Y.
Filed Apr. 23, 1970, Ser. No. 22,599
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11

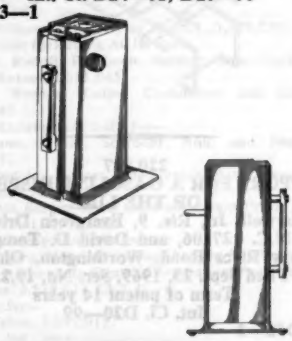
220,815
TYPEWRITER
William B. Sklaroff, Narberth, Pa., assignor to Litton Business Systems, Inc., New York, N.Y.
Filed May 4, 1970, Ser. No. 22,789
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11



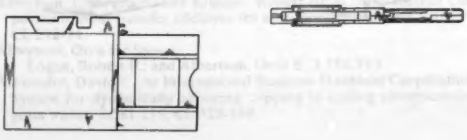
220,816
TYPEWRITER
Joseph L. Morelli, Hartford, Conn., assignor to Litton Business Systems, Inc., New York, N.Y.
Filed Mar. 5, 1970, Ser. No. 21,759
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11



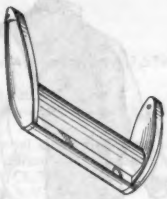
220,817
REFLEX MEASUREMENT APPARATUS
Stephens N. Sato, San Diego, Calif., assignor to Ivac Corporation, San Diego, Calif.
Filed Apr. 14, 1970, Ser. No. 22,423
Term of patent 14 years
Int. Cl. D24—*02*; D10—*08*
U.S. Cl. D83—1



220,818
CASSETTE FOR A SOUND SLIDE PROJECTOR
William Castedello, Plainville, Conn., assignor to The Kalart Company Inc., Plainville, Conn.
Filed Sept. 30, 1969, Ser. No. 19,347
Term of patent 14 years
Int. Cl. D16—*99*; D14—*01*
U.S. Cl. D26—14

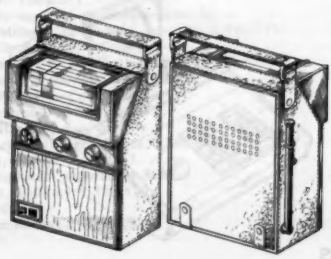


220,819
LUGGAGE HANDLE
Joseph N. Laurita, 66—19 Clinton Ave., Maspeth, N.Y. 11378
Filed May 18, 1970, Ser. No. 23,046
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—154



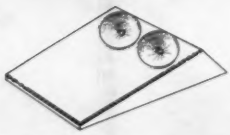
220,820
ROCKET TOY
Uwe C. Seefluth, Seestrasse, 2409 Klingberg, Germany
Filed Dec. 29, 1969, Ser. No. 20,672
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15

220,821
PORTABLE RADIO
Maurice D. Katz, 35 Broadway, Lawrence, N.Y. 11559
Filed Dec. 3, 1970, Ser. No. 26,272
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4



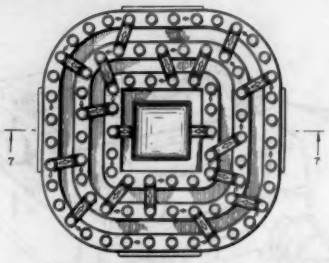
220,822
JACKET
Thomas E. De Wan, 9600 N. Lake Drive, Milwaukee, Wis. 53217
Filed Oct. 6, 1969, Ser. No. 19,439
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—189

220,823
CONTOURED PILLOW
Robert L. Howe and Norma C. Howe, both of 4581 Parkridge Road, Sacramento, Calif. 95822
Filed Aug. 4, 1969, Ser. No. 18,525
Term of patent 14 years
Int. Cl. D28—*99*
U.S. Cl. D83—1

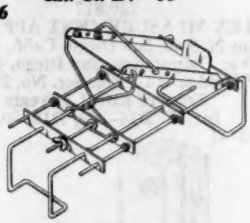


220,824
COMBINED DATA KEYBOARD ENTRY AND DISPLAY UNIT
Gerald M. Adams, Fayetteville, and James H. Frakes, Jr., Manlius, N.Y., assignors to SCM Corporation, New York, N.Y.
Filed May 15, 1970, Ser. No. 22,992
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

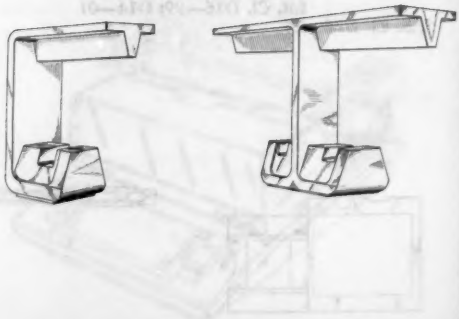
220,825
GAME BOARD
Frank Kohner, New York, N.Y., and Albert Stubbmann, Franklin Lakes, N.J., assignors to Kohner Bros., Inc., East Paterson, N.J.
Filed May 4, 1970, Ser. No. 22,795
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



220,826
HAND IRON SAFETY CRADLE
Raymond R. Vaughn, 6091 Cornell Drive, Huntington Beach, Calif. 92647
Filed Jan. 6, 1970, Ser. No. 20,775
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D49—6



220,827
SUPPORT FOR A GASOLINE DISPENSER OR THE LIKE
Hal C. Hartsell, Jr., Rte. 9, Evergreen Drive, Winston-Salem, N.C. 27106, and David D. Tompkins, 10350 Olentangy River Road, Worthington, Ohio 43085
Filed Sept. 23, 1969, Ser. No. 19,258
Term of patent 14 years
Int. Cl. D20—*99*
U.S. Cl. D52—2



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF MAY, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abbott Laboratories: *See—*
Crites, Nelson A.; and Lyons, Donald H., 3,580,079.

Abe, Katsuro; Kakinuma, Saburo; and Uno, Masaaki, to Hitachi, Ltd. Device for controlling pumps for operating hydraulic motors. 3,579,986, Cl. 60-52.

Abitibi, St. Ann, Paper Ltd.: *See—*
Hamilton, Douglas D., 3,580,308.

Abolins, Andrew, to Strick Corporation. Coupling device for container handling system. 3,580,410, Cl. 220-1.5

Acme Appliance Manufacturing Company: *See—*
Morgan, Philip R., 3,580,622.

Adachi, Kazuo: *See—*
Kasahara, Shigekazu; Takahashi, Yuji; Suzuki, Takashi; Umeda, Shinichi; Adachi, Kazuo; and Fukuda, Yasuo,3,580,883.

Adams, Gerald E.: *See—*
Barnes, Gerald L.; Cichy, Raymond G.; and Adams, Gerald E.,3,580,767.

Adams, Richard C.; Coombes, William S.; and Lerardo, Domenic, to Schjeldahl, G. T., Company. Multi-purpose punch. 3,580,120, Cl. 83-98.

Adams, Robert G.: *See—*
Warren, Robert C.; and Adams, Robert G.,3,580,610.

Addressograph-Multigraph Corporation: *See—*
Maul, John A.; Zofchak, James T.; and Anderson, David D., 3,580,169.
Scholle, Peter T.; and Webb, Samuel L., 3,580,158.
Seelenbinder, Terrance G., 3,580,677.

Admiral Corporation: *See—*
Garrett, Elgie E.; De Franco, Thomas P.; and Staples, Nicholas B., 3,581,135.

Aerojet-General Corporation: *See—*
Stevens, Roger L.; Putnam, Peter A.; and Sicona, Martin, 3,581,017.

Aerovox Corporation: *See—*
O'Mara, William H.; and Wood, Owen J., 3,579,770.

AG fur Industrielle Elektronik AGIE: *See—*
Panschow, Rudolf; Russbuelt, Herbert; Suhr, Volker; and Ullmann, Werner, 3,581,045.
Ullmann, Werner; Tadini, Costantino; and Salim, Ehsan, 3,581,043.

Agfa-Gevaert Aktiengesellschaft: *See—*
Ehngelsmann, Dieter; Schroder, Rolf; and Becker, Erwin, 3,580,152.
Hennig, Fridolin; Kellner, Hans-Jurgen; Potz, Klaus; and Gotze, Christian, 3,580,443.
Hieber, Fritz; Burger, Erich; and Huber, Hans-Peter, 3,580,675.
Scholz, Norbert, 3,580,662.

Agfa-Gevaert Aktiengsellschaft: *See—*
Zahn, Wolfgang; Nagel, Erlich; and Langer, Reinhold, 3,580,155.

Aileo, Jackson Anthony, to Gentex Corporation. Protective helmet of adjustable size. 3,579,637, Cl. 2-3.

Aiwa Co., Ltd.: *See—*
Masuda, Takeo, 3,581,015.

Ajinomoto Co., Inc.: *See—*
Shiio, Isamu; Nakamori, Shigeru; and Sano, Kounosuke, 3,580,810.

Akahide, Kozo: *See—*
Kanzaki, Fumiaki; Kozakura, Yoshio; Akahide, Kozo; and Suzuki, Tamotu,3,581,039.

Akermanis, Andreys O. Ladder for fruit picker. 3,580,359, Cl. 182-49.

Akst, Harold, to Burroughs Corporatinon. Electrical connection and distribution system. 3,581,268, Cl. 339-18.

Aktiebolaget Atomenergi: *See—*
Lofroth, Enar, 3,580,808.

Aktiebolaget Bofors: *See—*
Olsson, Tore Bertil Reinhold; and Nilsson, Oake Valentin, 3,581,109.

Aktiebolaget Electrolux: *See—*
Kogel, Wilhelm Georg, 3,580,004.

Aktiebolaget Jonkoping-Vulcan: *See—*
Eriksson, Birger Sture Erik, 3,580,640.

Aktiebolaget Stadex: *See—*
Grundschober, Friedrich; and Sambeth, Joerg, 3,580,218.

Albertson, Clarence E.; and Krueger, Robert H., to Borg-Warner Corporation. Heat transfer additives for absorbent solutions. 3,580,759, Cl. 252-71.

Albertson, Orris E.: *See—*
Logan, Robert P.; and Albertson, Orris E.,3,580,193.

Alexander, David C., to International Business Machines Corporation. System for dynamically adjusting clipping in editing electrocardiogram waves. 3,581,219, Cl. 328-168.

Alexander, Donald: *See—*
Bemiss, Robert P., 3,580,478.

Alexander, Jerry: *See—*
Stevens, Irving J.; and Alexander, Jerry,3,579,831.

Alfa-Laval AB: *See—*
Jonsson, Lars-Erik, 3,580,493.
Schnittger, Jan R.; Nilson, Carl-Goran; and Larsson, Bengt D. R., 3,580,492.

Alford, Andrew. Directional coupler wherein dielectric media surrounding main line is different from dielectric media surrounding coupled line. 3,581,243, Cl. 333-10.

Algemene Kunstzijde Unie N.V.: *See—*
Eshuis, Jannes; and Tjebbes, Horatius, 3,579,765.

Alkalay, Jorge; and Alkalay, Oton. Container filling device. 3,580,299, Cl. 141-59.

Alkalay, Oton: *See—*
Alkalay, Jorge; and Alkalay, Oton,3,580,299.

All-Steel Equipment Inc.: *See—*
Powell, James C., 3,580,122.

Allen, David T.: *See—*
Ward, Ronald C.; and Allen, David T.,3,581,011.

Allen, Howard L.; and De Graff, Charles D., to Hoover Company, The. Motor-pump shaft seal. 3,580,588, Cl. 277-32.

Allen, Joseph C.; Bednarski, Valery N.; and Hall, Russell W., Jr., to Texaco Inc. Oil recovery by a combination of solution gas drive and water flooding. 3,580,335, Cl. 166-263.

Allied Chemical Corporation: *See—*
Cheng, Chao-Shing; and Evans, Francis E., 3,580,857.
Demler, Walter R.; and Jachlewski, Arthur F., 3,580,919.
Evans, Francis E.; and Cheng, Chao-Shing, 3,580,858.
Rosen, Milton K.; and Mason, Charles D., 3,580,898.
Tyrner, Joseph M., 3,580,111.

Allina, Stanley F., to Perfection Manufacturing Company, The. Grass catcher assembly. 3,579,966, Cl. 56-202.

Allison, Robert W., Jr.; Brokloff, Robert W.; and Woodyard, John R., to United States of America, Atomic Energy Commission. Method for producing a chromium activated aluminum oxide scintillator. 3,580,822, Cl. 204-58.

Alpha Metals Inc.: *See—*
Boyle, Martin A., 3,579,817.

Alps Electric Company Limited: *See—*
Nakagawa, Masaharu, 3,581,237.

Altman, Norman G., 45% to Lipton, Charles H., and 10% to Ebert, Michael. Palm print identification system. 3,581,282, Cl. 340-149.

Aluminium Laboratories Limited: *See—*
Howitt, Fred; and Taylor, Ian, 3,580,747.

Amann, Karl: *See—*
Breitmeyer, Richard; and Amann, Karl,3,581,059.

Amano, Hiroshi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic music keyer with touch responsive volume control employing a mechanical-electrical transducer. 3,580,979, Cl. 84-1.1

Amco International: *See—*
Terrell, Kyle E.; and Rester, Darryl C., 3,580,341.

American Can Company: *See—*
Gerber, Reinhold; Kerrigan, James Edward; and Hawley, Harry Ray, 3,579,737.
Sarka, Albert J.; and Blake, Trevor H., 3,580,676.

American Cyanamid Company: *See—*
Lutz, Albert William, 3,580,913.
Reddy, Thomas Bradley, 3,580,828.

American Gage & Machinery Company: *See—*
Peonski, Edward, 3,579,843.

American Greetings Corporation: *See—*
Jordan, Grant H., 3,580,791.

American Hoist & Derrick Company: *See—*
Brown, Archer W.; Montgomery, James L.; Beer, Walter A.; and Mero, Thomas J., 3,580,345.

American Home Products Corporation: *See—*
Wolf, Milton; and Diebold, James L., 3,580,915.

American Optical Corporation: *See—*
Beguin, Fred P.; and Dostourian, Harry, 3,579,640.
Siegmund, Walter P., 3,580,775.

American Pulverizer Company: *See—*
Strom, Sven B., 3,580,518.

American Standard, Inc.: *See—*
Mac Kenzie, Douglas James, 3,580,078.
Martin, George, 3,580,513.

Amerola Products Corporation: *See—*
Merola, Anthony, 3,580,576.

Ameron, Inc.: *See—*
Pingree, Robert J., 3,580,384.

AMF Incorporated: *See—*
Gianese, Goffredo, 3,579,953.
Mills, James Claiborne, Jr.; and Hays, Gordon W., 3,579,957.
Amfahr, Warren U. RF T-pad low impedance coupling circuit attenuator with AGC voltage control. 3,581,210, Cl. 325-411.
Amorese, Franklyn J., to Sybron Corporation. Package, liquid flushed, steady bearing assembly. 3,580,547, Cl. 259-23.
AMP Incorporated: *See—*
Maltais, Frederick Jean, 3,580,619.
Ampex Corporation: *See—*
Bigg, Geoffrey James; and Heaslett, Alistair Michael, 3,581,176.
Orlowski, Donald W.; and Schroeder, Donald S., 3,580,988.
Amsted Industries Incorporated: *See—*
Resener, Baird E., 3,580,388.
Anchor Enterprises Corporation: *See—*
Toth, Louis, 3,579,724.
Andersen, F. S., ingenior-og maskinforretning I/S: *See—*
Andersen, Ole Stig; and Rathje, Ove, 3,580,694.
Andersen Laboratories, Incorporated: *See—*
Belford, John F.; Gibeau, Donald E.; and Ciriello, John, 3,581,247.
Andersen, Ole Stig; and Rathje, Ove, to Andersen, F. S., ingenior-og maskinforretning I/S. Combined fluid impellers and self-sealing closures. 3,580,694, Cl. 416-136.
Anderson, David D.: *See—*
Maul, John A.; Zofchak, James T.; and Anderson, David D.,3,580,169.
Anderson, Olavi F.: *See—*
Donadio, Vincent J.; and Anderson, Olavi F.,3,580,031.
Anderson, Weston A., to Varian Associates. Phase correlation for an RF spectrometer employing an RF carrier modulated by a pseudorandom sequence. 3,581,191, Cl. 324-0.5
Anderson, William J.: *See—*
Caneer, Ralph A.; Anderson, William J.; Morgan, Bert B.; and Goodman, Jerry M.,3,579,760.
Andersson, Gustav Mattias; and Granstrom, Ernst Henning Ture, said Granstrom assor. to said Andersson. Pole base providing adjustability for angular axial alignment of the pole. 3,579,936, Cl. 52-297.
Anderton, Kenneth, to Imperial Chemical Industries Limited. Cyano containing styryl dyestuffs. 3,580,946, Cl. 260-465.
Ando, Sadanao, to Kabushiki Kaisha Ricoh. Electrostatic photocopying apparatus. 3,580,672, Cl. 355-3.
Andreas, Ehrhardt, to Hazemag Hartzerkleinerungs- und Zementmaschinenbau- Gesellschaft, m.b.H. Process for dressing asbestos ore waste. 3,580,537, Cl. 251-4.
Andreassian, Jean-Michel, to Compagnie du Filage des Metaux et des Joints Curty. Extrusion mandrel and method. 3,580,038, Cl. 72-264.
Andreis, Pio, to Societa Italiana Telecomunicazioni Siemens S.p.A. Flange for electromagnetic coil. 3,581,260, Cl. 336-192.
Angele, Henry, to Etablissements Valois. Aerosol containers. 3,580,430, Cl. 222-394.
Angliker, Hans-Joerg, to Ciba Limited. Water-insoluble monoazo dyestuffs. 3,580,902, Cl. 260-207.
Anliker, Rudolf; Duennenberger, Max; Schmid, Karl; and Siegrist, Adolf Emil, to Ciba Limited. 2-Biphenylbenzoxazoles. 3,580,924, Cl. 260-307.
Anzai, Shiro: *See—*
Onishi, Akira; Anzai, Shiro; Irako, Koichi; Fujio, Ryota; Hayakawa, Yoshihiro; and Miyamoto, Shoji,3,580,895.
Apotheloz, Robert; Bigler, Hans-Ulrich; and Kessler, Rene, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Projectile with hollow explosive charge. 3,580,174, Cl. 102-56.
Apparel Research Foundation, Inc.: *See—*
Bonton, Ira D.; and Sylvester, Willard G., 3,580,564.
Aqua-Marine Manufacturing Limited: *See—*
Magi, Hugo; and Smith, John, 3,581,079.
Aquair Corporation Limited: *See—*
Sloan, Frank Philip, 3,579,650.
Araki, Shigeru; Takahashi, Shozo; and Muto, Ichiro, to Matsushita Electric Industrial Co., Ltd. High thrust bearing apparatus. 3,580,649, Cl. 308-233.
Arbuckle, Timothy, to Computer Modem Corporation. Signal transmission method and system. 3,581,279, Cl. 340-146.1
Ariens Company: *See—*
Mollen, Ignatius J., 3,580,351.
Arkus-Duntov, Zora, to General Motors Corporation. Vehicle power unit and drive train. 3,580,350, Cl. 180-44.
Arlt, Dieter, to Farbenfabriken Bayer Aktiengesellschaft. Chlorosulphonyl-tert.-butylisocyanate and its preparation. 3,580,942, Cl. 260-453.
Armstrong Cork Company: *See—*
Heinzelman, Earl E., 3,579,732.
Spencer, Virgil, 3,580,516.
Armstrong, George: *See—*
Gossling, Robert C.; and Armstrong, George,3,580,323.
Armstrong, Merritt S., to HC Electronics, Inc. Fast response dynamic gain control circuit. 3,581,223, Cl. 330-29.
Arndt, John P.; and Franklin, Edmond G., to Clevite Corporation, mesne. Oscillator circuit for ultrasonic apparatus. 3,581,125, Cl. 310-8.1
Arnold, Richard B., to General Electric Company. Coil developing apparatus. 3,579,791, Cl. 29-205.
Arnold, Richard B.; and Smith, Dallas F., to General Electric Company. Method and apparatus for forming shaped insulators and for developing coils of a magnetic core. 3,579,818, Cl. 29-596.
Arnott, Edward G. F.; and Lewis, Daniel W., to Westinghouse Electric Corporation. Electric lamp having an envelope composed of photoresistant soda-lime silicate glass. 3,581,137, Cl. 313-109.
Arnould, Marcel M.; Ward, John C., Jr.; Ray, William Floyd; and Budzyn, Boleslaw L., to Penstar Industries, Inc. Portable elevator for tobacco sticks. 3,580,386, Cl. 198-131.
Aro Corporation, The: *See—*
Brandenberg, Karl A., 3,580,137.
Brandenberg, Karl A., 3,580,266.
Brandenberg, Karl A., 3,580,285.
Aronovitz, Manuel. Bath and shower seat. 3,579,668, Cl. 4-185.
Arrow-Hart, Inc.: *See—*
Christensen, Paul M., 3,581,032.
Arsdale, Lyle R. Van; and Lathrop, Francis M., II, to M&J Valve Company. Valve operating system. 3,580,282, Cl. 137-608.
Arvidson, Paul W.; Park, William G.; and Williams, Keith S., to United States of America, Army. Bullet trap attachment for machine guns. 3,580,130, Cl. 89-31.
Asada, Takeo; and Kamiya, Toshihiro, to Omron Tateisi Electronics Co. Apparatus for checking a ticket. 3,580,121, Cl. 83-107.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Shimodoi, Yutaka; Ootake, Heiichiro; Mihara, Kouichi; Takao, Kiyoshi; and Matsuda, Shogo, 3,580,735.
Asai, Hiromi: *See—*
Tsujihata, Keiji; Shimada, Masatoshi; Asai, Hiromi; Sawada, Yasuhiro; and Ayuha, Zensaku,3,581,070.
Asano, Setunobu: *See—*
Kuraishi, Michio; Asano, Setunobu; and Isogai, Nobuo,3,580,968.
Ashenfelter, Richard J.: *See—*
Kenney, James E.; and Ashenfelter, Richard J.,3,580,175.
Asmuth, James E., to Wisconsin Tissue Mills. Table cover. 3,580,797, Cl. 161-126.
Assmus, Friedrich: *See—*
Ganter, Wolfgang; and Assmus, Friedrich,3,581,129.
Aston, Keith, to Pavelle Corporation, The. Electronic thermostat. 3,581,062, Cl. 219-501.
Astro Controls, Inc.: *See—*
Korbilas, Christ P.; and Smith, Raymond W., 3,580,276.
Atkinson, Ross T. Cable-suspended roof structure. 3,579,932, Cl. 52-83.
Atlantic Richfield Company: *See—*
Moyer, Hallard C.; and Fauber, Eugene M., 3,580,736.
Shalit, Harold, 3,580,823.
Atlantic Wool Combing Co.: *See—*
Menzies, William C., Jr., 3,579,744.
Atlas Copco Aktiebolag: *See—*
Bertilsson, Alf Georg, 3,580,435.
Tegholm, Ruben, 3,581,194.
Atwater-Forbes Corporation: *See—*
Soriano, Charles A., 3,579,837.
Aurich, Christoph W.: *See—*
Plonsker, Harvey R.; Vaughn, Reuben F.; Lang, Felix C.; Aurich, Christoph W.; and Bowie, Philip A.,3,579,761.
Aurich, Peter F.: *See—*
Schuette, Thomas L.; Straub, Melvin J.; Dumas, Pierre; and Aurich, Peter F.,3,579,771.
Ausnit, Steven. Apparatus for making a web having integral interlocking rib and groove portions. 3,579,730, Cl. 18-12.
Austin, Eric R.; and Bill, Eric G., to B.S.A. Tools Limited. Presettable tool arrangements for machine tools. 3,580,129, Cl. 82-2.
Automated Handling Systems, Inc.: *See—*
Nearman, Richard E., 3,580,183.
Automated Packaging Corporation: *See—*
Lerner, Bernard, 3,579,948.
Automatic Feed Company: *See—*
Cramer, Donald L.; and Limpach, Paul D., 3,580,021.
Autophon Aktiengesellschaft: *See—*
Piazza, Gian-Franco; Streit, Rudolf; Ulrich, Martin; Laber, Werner; Burkert, Adolf; Tron, Manfred; and Waluga, Wolfgang, 3,581,183.
Autotelic Industries Limited: *See—*
Speeth, Sheridan D., 3,580,575.
Autotrol Corporation: *See—*
P'osser, David G., 3,580,615.
Avesta Jernverks Aktiebolag: *See—*
Bjorkroth, Jarl Allan, 3,581,054.
Aviation Instrument Manufacturing Corporation: *See—*
Winter, John W.; and Harrison, Guy K., Jr., 3,579,847.
Ayerst, Mc Kenna & Harrison, Ltd.: *See—*
Laliberte, Real, 3,580,945.
Ayres, Waldemar A., to Becton, Dickinson and Company. Method of thermometer pointing and apparatus therefor. 3,579,838, Cl. 33-19.
Ayuha, Zensaku: *See—*
Tsujihata, Keiji; Shimada, Masatoshi; Asai, Hiromi; Sawada, Yasuhiro; and Ayuha, Zensaku,3,581,070.
Baader, Herbert; and Sennewald, Kurt, to Knapsack Aktiengesellschaft. Process for the production of acetylene. 3,580,958, Cl. 260-679.
Babcock & Wilcox Company, The: *See—*
Grams, Richard A., 3,579,990.
Babcock, John C.: *See—*
Campbell, J. Allen; and Babcock, John C.,3,580,937.
Babst, Dean V. Fish catching apparatus with snap actuatable hooks. 3,579,897, Cl. 43-35.

Badinter, Efim Yakovlevich; Zelikovsky, Zinovy Ieremeevich; and Lazurevskaya, Irina Georgievna. Safety fuse with glass coating on fusible portion. 3,581,262, Cl. 337-159.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Fuerst, Ernst; and Weitz, Hans-Martin, 3,580,839.

Bafford, Richard Anthony, to Pennwalt Corporation. Auto-oxidation of aldehydes in the presence of acylating agents. 3,580,955, Cl. 260-610.

Baker, Edward D., to National Industrial Manufacturing. Hamburger cooking machine. 3,580,164, Cl. 99-339.

Baker Oil Tools, Inc.: *See—*
Dean, Michael R.; Castro, Luis F.; and Salerni, John V., 3,580,332.

Baker, Ralph J. Condensate valve. 3,580,267, Cl. 137-203.

Balchin, Nigel C.: *See—*
Brown, Kenneth William; and Balchin, Nigel C.,3,581,050.

Baldwin, D. H., Company: *See—*
Uetrecht, Dale M., 3,580,980.

Baldwin-Lima-Hamilton Corporation: *See—*
Tidball, Robert A.; King, William M.; Bosley, Dewey R.; and Jennings, Charles M., 3,580,816.

Balfanz, Glenn F., Jr. Weld box for tube forming mill. 3,581,041, Cl. 219-60.

Ballard, Francis J., Jr., to Brown & Williamson Tobacco Corporation. Pneumatic feed system for uniform supply of tobacco to cigarette making machines. 3,580,644, Cl. 302-59.

Ballard, Gary W., to Carrier Corporation. Absorption refrigeration machine with generator level control. 3,580,013, Cl. 62-148.

Balle, Walter; and Pommer, Gunter, to Leonhard Herbert Maschinenfabrik. Tire vulcanising press. 3,579,736, Cl. 18-17.

Ballen, Sue. Set a table puzzle. 3,579,862, Cl. 35-8.

Balm Paints Limited: *See—*
Clarke, Michael Raymond; and Filipowicz, Leon, 3,580,880.

Balteau Electric Corporation: *See—*
Webb, Thomas Alan; and Harvey, Jay A., 3,580,997.

Baltimore and Ohio, Railroad Company, The: *See—*
Payseure, Lawrence A., 3,581,071.

Balzer, Jerry L., to Hoover Company, The. Suction cleaner nozzle adjustment. 3,579,699, Cl. 15-361.

Bang, Mogens W., to Stackpole Carbon Company. Apparatus for making stators for rotary electric switches. 3,579,743, Cl. 18-36.

Banister, Ronald A.: *See—*
Wrabetz, Voyta E.; and Banister, Ronald A.,3,580,102.

Banks, Peter Baldwin, to English Electric Valve Company Limited. Glass treatment with discrete areas. 3,580,709, Cl. 65-30.

Banning, Thomas A., Jr. Subscription television system utilizing a transmission line for conducting each aesthetic quality television program. 3,580,989, Cl. 178-5.1

Bar-On, Ari; and Emslie, Norman M., to Philco-Ford Corporation. Radial runout recorder. 3,580,064, Cl. 73-146.

Barabashkin, Vladimir Pavlovich: *See—*
Zayats, Iosif Lvovich; Barabashkin, Vladimir Pavlovich; Matveev, Boris Nikolaevich; and Shevakin, Jury Fedorovich,3,580,036.

Baranov, Boris Konstantinovich; and Stromin, Boris Alexandrovich. Device for control of a rectifier motor. 3,581,171, Cl. 318-227.

Barber, Donald E., to Bucyrus-Erie Company. Automatic torque control for a dual stator motor. 3,581,170, Cl. 318-214.

Barber-Greene Company: *See—*
Smith, Fred T., 3,580,407.

Barclays Bank Limited: *See—*
Bell, John,3,580,205.

Barden, Wayne A.: *See—*
Rozema, Arthur L.; Brady, Lynn J.; and Barden, Wayne A.,3,579,819.

Bardsley, Donald E.: *See—*
Vore, Herbert G.; and Bardsley, Donald E.,3,579,726.

Barker, Layle B., to Reynolds Metals Company. Swimming pool structure. 3,579,665, Cl. 4-172.19

Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
Bauer, Karl; and Turk, Herbert, 3,581,060.

Barnard, Walter C.; and Hodapp, Donald C., to Whirlpool Corporation. Ice maker with water distributor. 3,580,008, Cl. 62-347.

Barnes Engineering Company: *See—*
Pearsall, Denton; and Jankowitz, Gerald, 3,581,092.

Barnes, Gerald L.; Cichy, Raymond G.; and Adams, Gerald E., to Uniroyal, Inc. Method of making a toothed drive belt with an abrasion resistant urethane coating on the transmission surface. 3,580,767, Cl. 156-138.

Barney, Arthur Livingston; and Honsberg, Wolfgang, to Du Pont de Nemours, E. I., and Company. Vulcanization accelerators of polycyclic ethers for fluorinated polymers. 3,580,889, Cl. 260-47.

Barney, Ronald N.: *See—*
Herbert, David B.; and Barney, Ronald N.,3,580,322.

Barnhard, Philip, IV, to Du Pont de Nemours, E. I., and Company. Process for preparation of pentolite. 3,580,754, Cl. 149-93.

Barrett, George M. Pressure intensifier. 3,579,985, Cl. 60-52.

Barrett, Sonja I. Ultraviolet fluorescent analyzer for monitoring of oil in discharge ballast. 3,581,085, Cl. 250-43.5

Barsby, Alan, to Marshall Sons & Company Limited. Air heater. 3,580,237, Cl. 126-110.

Bartik, William J., to Sperry Rand Corporation. Tuned plated wire content addressable memory. 3,581,294, Cl. 340-174.

Bash, Sidney D., to Stewart-Warner Corporation. Spool valve. 3,580,286, Cl. 137-625.68

Bassett, Ernest D. Collating machine feeding into or out of racks. 3,580,563, Cl. 270-58.

Bates, Tex, to Finn Industries, Inc., The. Carton sealing apparatus with rotation control. 3,579,954, Cl. 53-76.

Batista, Roy I.: *See—*
Hagan, Melvin A.; and Batista, Roy I.,3,579,808.

Batlas, George X., 1/4 to Longo, Vincent, 1/4 to Pearl, Curtis F., and 1/4 to Genantonio, Anthony. All-direction atomizers. 3,580,510, Cl. 239-327.

Battelle Development Corporation: *See—*
Leith, Emmett N.; and Upitnieks, Juris, 3,580,655.

Battelle Development Corporation, The: *See—*
Ramseier, Serge, 3,580,089.

Battelle Memorial Institute: *See—*
Bouladon, Gabriel; and Zuppiger, Paul, 3,580,182.

Bauer & Associates, Inc.: *See—*
Milton, Rex W., 3,581,052.

Bauer, Karl; and Turk, Herbert, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Temperature control device in a heated galette. 3,581,060, Cl. 219-469.

Bauer, Peter; and Mentzer, William R., Jr., to Bowles Fluidics Corporation. Fluidic slip-resolver system. 3,580,499, Cl. 235-201.

Bauerlein, Carl C., to Eaton Yale & Towne, Inc. Belt driven ice maker. 3,580,007, Cl. 62-345.

Bauger, Louis: *See—*
Caruel, Jacques Emile Jules; Quillevere, Herve Alain; and Bauger, Louis,3,579,983.

Bauknechte GEA Electrotechnische Fabriken Gesellschaft mit beschrankter Haftung: *See—*
Breitmeyer, Richard; and Amann, Karl, 3,581,059.

Baumann, Ludwig. Bubble bath device. 3,579,659, Cl. 4-180.

Baunach, Waldemar: *See—*
Schunck, Kurt; and Baunach, Waldemar,3,580,674.

Bausch & Lomb Incorporated: *See—*
Clark, James A., 3,580,088.

Bavor, Gordon F.: *See—*
Peyser, Leonard F.; and Bavor, Gordon F.,3,581,094.

BBA Group Limited: *See—*
Kirkby, Donald, 3,581,168.

Beamer, John D., to Rain Bird Sprinkler Mfg. Corporation. Drive mechanism for large volume rotary sprinklers. 3,580,507, Cl. 239-233.

Bean, Dennis P.; and Parks, John C., to Solatron Enterprises,. Coil former. 3,580,030, Cl. 72-130.

Beattie, John O. Apparatus for casting and thermally curing plastic sheets. 3,579,738, Cl. 18-26.

Beatty, Robert D., Jr.; and Griffiths, Thomas C., to Eaton Yale & Towne, Inc. Tire inflation monitory system. 3,581,277, Cl. 340-58.

Beaubier, Richard C., to Ethyl Corporation. Surface gap spark plug. 3,581,141, Cl. 313-130.

Beaudoin, Norman R.; and Lauben, Robert W., to General Electric Company. Armature-contact rod connection for current- limiting breaker. 3,581,253, Cl. 335-16.

Beaunit Corporation: *See—*
Dessauer, Hans J., 3,579,961.

Beausoleil, William F., to International Business Machines Corporation. Module switching apparatus with status sensing and dynamic sharing of modules. 3,581,286, Cl. 340-172.5

Becker, Erwin: *See—*
Ehngelsmann, Dieter; Schroder, Rolf; and Becker, Erwin,3,580,152.

Beckman Instruments, Inc.: *See—*
Watanabe, Hideo; and Leonard, John E., 3,580,239.

Beckwith, Robert C.: *See—*
Hecker, Robert W., Jr.; and Beckwith, Robert C.,3,579,696.

Becton, Dickinson and Company: *See—*
Ayres, Waldemar A., 3,579,838.
Stawski, Theodore H., 3,580,472.

Bednarski, Valery N.: *See—*
Allen, Joseph C.; Bednarski, Valery N.; and Hall, Russell W., Jr.,3,580,335.

Beeler, Robert S., to Eastman Kodak Company. Film-sound synchronizing system. 3,580,669, Cl. 353-15.

Beer, Walter A.: *See—*
Brown, Archer W.; Montgomery, James L.; Beer, Walter A.; and Mero, Thomas J.,3,580,345.

Beggs, James E., to General Electric Company. Metal clad insulated electrical heater. 3,581,144, Cl. 313-340.

Beguin, Fred P.; and Dostourian, Harry, to American Optical Corporation. Hearing protector headsets. 3,579,640, Cl. 2-209.

Behar, Isaac, to Trefileries & Cableries de Bourg et du Havre. Process for the modification of the mechanical characteristics of carbon steel wire. 3,580,746, Cl. 148-12.

Behnke, Edward: *See—*
Kron, Harold O.; Liu, John K.; and Behnke, Edward,3,580,371.

Behnke, John M., to Bristol-Myers Company. Polishing composition. 3,580,875, Cl. 260-23.

Behr, Michael I.; Coon, Lewis B., Jr.; and Bickel, Charles E., to Burroughs Corporation. Binary data handling system. 3,581,297, Cl. 340-174.1

Belcastro, Richard J., to GTE Automatic Electric Laboratories, Incorporated. Apparatus for evaluating signals read from magnetic medium. 3,581,110, Cl. 307-237.

Belford, John F.; Gibeau, Donald E.; and Ciriello, John, to Andersen Laboratories, Incorporated. Delay lines having nondispersive width-shear mode propagation characteristics and method of making same. 3,581,247, Cl. 333-30.

Bell & Howell Company: *See—*
Cooper, Dester P., Jr., 3,580,661.
Gish, David B., 3,581,105.

Bell, Allan J.; and Stone, Roger B. Frequency modulation signal demodulator. 3,581,220, Cl. 329-126.

Bell, Bella: *See—*
Bell, John,3,580,205.

Bell, John, deceased0 (by Barclays Bank Limited0Bell, Bella; executors), to Muirhead Limited. Ship stabilizers. 3,580,205, Cl. 114-125.

Bell, Robert P., Jr.: *See—*
Carter, Ernest P.; Bell, Robert P., Jr.; and Carroll, Alton P., Jr.,3,580,296.

Bell Telephone Laboratories, Incorporated: *See—*
Boyle, Willard S.; and Morton, Jack A., 3,581,151.
Frey, Dean R.; Hone, George L.; and Ramsey, Edward L., Jr., 3,581,269.
Gaunt, Wilmer B., Jr., 3,581,122.
Gressitt, Tillman J., 3,579,823.
Kretzmer, Ernest R., 3,581,111.
Mounts, Frank W., 3,580,999.
Robertson, George H., 3,581,078.
Smith, Peter W., 3,581,228.

Bellart, Jean-Pierre B., to Societe Anonyme Poclain. Earthworking machine. 3,580,406, Cl. 214-137.

Bellasio, Elvio: *See—*
Cavalleri, Bruno; Bellasio, Elvio; and Testa, Emilio,3,580,932.

Bemiss, Robert P., 1/2 to Alexander, Donald. Packaging. 3,580,478, Cl. 229-43.

Ben Bassett, Marvin, to Technicolor, Inc. Method for removing film from a film cartridge. 3,580,665, Cl. 352-78.

Bender, Carl M.: *See—*
Hogue, Dean M.; and Bender, Carl M.,3,580,343.

Bender, Charles E.; and Fraser, Douglas S., to Cenco Medical/Health Supply Corporation, mesne. Fermenter having a magnetically driven agitator. 3,580,812, Cl. 195-143.

Bendix Corporatin, The: *See—*
Strack, Richard R., 3,580,082.

Bendix Corporation, The: *See—*
Shear, Wayne G.; Everett, Samuel R.; and Olmstead, Merlin E., 3,581,309.

Bendix-Westinghouse Automotive Air Brake Company: *See—*
Ternent, George E., 3,580,646.

Benham, Ralph E., to Purex Corporation, Ltd. Irrigation control apparatus. 3,580,504, Cl. 239-70.

Bennett Enterprises, Inc.: *See—*
Bennett, Lewis D., 3,580,278.

Bennett, George K.; and Buchanan, Richard G., to Psychological Corporation, The. Test administering apparatus. 3,579,870, Cl. 35-48.

Bennett, Lewis D., to Bennett Enterprises, Inc. Fluid actuated transmission control. 3,580,278, Cl. 137-554.

Bentov, Itzhak E., to Medi-Tech Incorporated. Anatomical model. 3,579,858, Cl. 35-17.

Bentz, Francis: *See—*
Engelhard, Helmut; Bentz, Francis; Rinkler, Heinrich; and Nischk, Gunther,3,580,966.

Berardinelli, Frank M.: *See—*
McAndrew, Francis B.; Price, Martin B.; and Berardinelli, Frank M.,3,580,928.

Beresnev, Boris Ivanovich; Bulychev, Dmitry Konstantinovich; Martynov, Evgeny Dmitrievich; Ryabinin, Jury Nikolaevich; Rodionov, Kuzma Petrovich; Maltsev, Mikhail Vasilievich; Britnev, Georgy Pavlovich; and Kocherov, Anatoly Vasilievich. Method of manufacturing rod, shaped and tubular products from difficult-to-work metals and alloys, preferably high melting-point and chemically active ones. 3,580,019, Cl. 72-47.

Berliner Maschinenbau AG vorm. L. Schwartzkopff: *See—*
Trinks, Walter; Netzer, Theodor Karl; Victora, Hans T.; Saurer, Hermann; and von Paulgerg, Heinrich, 3,580,048.

Berman, Leon, to C. I. T. Compagnie, Industrielle des Telecommunications. High stability oscillator. 3,581,236, Cl. 331-116.

Bernard, Georges M.: *See—*
Pelenc, Yves J.; and Bernard, Georges M.,3,581,202.

Bernardin, Leo J., to Kimberly-Clark Corporation. Sanitary napkin and flushable wrapper therefor. 3,580,253, Cl. 128-290.

Bernasek, Edward; and Eaton, Calley Neil, to Reynolds, R. J., Tobacco Company. Starch levulinates. 3,580,906, Cl. 260-233.5

Berryman, Charles O.: *See—*
Chute, Richard; and Berryman, Charles O.,3,580,603.

Bersworth, Frederick C. Chelating compositions based on chelating acids and amines. 3,580,950, Cl. 260-534.

Bertelli, Guido: *See—*
Torti, Luigi; and Bertelli, Guido,3,580,800.

Berthiez, Charles William. Balance compensating device. 3,580,133, Cl. 90-11.

Bertilsson, Alf Georg, to Atlas Copco Aktiebolag. Spray gun with pressure operated valve. 3,580,435, Cl. 222-504.

Bertin & Cie: *See—*
Bertin, Jean Henri; and Croix-Marie, Francis Marie Jean, 3,580,181.

Bertin, Jean Henri; and Croix-Marie, Francis Marie Jean, to Bertin & Cie. Surface-effect transport support systems. 3,580,181, Cl. 104-23.

Besora, Juan E. Juice extractor. 3,580,314, Cl. 146-3.

Besson, Rene; and Chopard, Remy, to Ebauches S.A. Flexure-type symmetrical oscillator. 3,579,975, Cl. 58-23.

Bethlehem Steel Corporation: *See—*
Merrill, Neal W.; and Nippert, Charles R., 3,580,023.
Roscoe, John D., 3,580,556.

Bexford Limited: *See—*
Clachan, Margaret L.; McGrail, Patrick T.; and Shephard, Basil R., 3,580,734.

Beyl, Jean Joseph Alfred. Heel downholder for safety ski bindings. 3,580,597, Cl. 280-11.

Bhagat, Gopal C., to Xerox Corporation. Apparatus for duplexing. 3,580,670, Cl. 355-3.

Bialkowski, Ludwik S., to Goodrich, B. F., Company, The. Automatic adjustment mechanism particularly for brakes. 3,580,365, Cl. 188-196.

Bianca, Dominick, to Du Pont de Nemours, E. I., and Company. Non-yellowing polyurethane. 3,580,873, Cl. 260-18.

Biancamaria, Joseph, to L'homme (Societe Anonyme). Method of making accurately dimensioned smooth- surface multi-layer cardboard tubes. 3,580,146, Cl. 93-94.

Bickel, Charles E.: *See—*
Behr, Michael I.; Coon, Lewis B., Jr.; and Bickel, Charles E.,3,581,297.

Bickford, John H., to Veeder Industries Inc. Fluid dispensing apparatus indicator system. 3,580,421, Cl. 222-27.

Big Drum, Inc.: *See—*
Lutsey, Thomas H., 3,580,188.

Bigg, Geoffrey James; and Heaslett, Alistair Michael, to Ampex Corporation. System for driving electric motors. 3,581,176, Cl. 318-327.

Bigler, Hans-Ulrich: *See—*
Apotheloz, Robert; Bigler, Hans-Ulrich; and Kessler, Rene,3,580,174.

Bill, Eric G.: *See—*
Austin, Eric R.; and Bill, Eric G.,3,580,129.

Billawala, Shahbuddin A., to Burroughs Corporation. Support device for magnetic head. 3,581,298, Cl. 340-174.1

Billenstein, Siegfried: *See—*
Geymayer, Peter; Billenstein, Siegfried; and Renz, Werner,3,580,849.

Bindernagel, Ali; Kost, Erwin; and Staat, Karl-Hans, to Kocks, Friedrich, Firma. Apparatus for calibrating pipes. 3,580,020, Cl. 72-58.

Bini, Giancarlo; and Tamoni, Gianfranco, to Carlo Gavazzi S.p.A. Regulating valve for water mixing in air conditioning systems. 3,580,284, Cl. 137-625.18

Bio-Medical Sciences, Inc.: *See—*
Weinstein, Berel, 3,580,241.

Birchall, William R.: *See—*
Watson, Lloyd M.; and Birchall, William R.,3,580,862.

Bissell, D L.: *See—*
Wilhelm, D F.; Miller, Peter S.; Bissell, D L.; and Lambroff, George M.,3,581,289.

Bjorkroth, Jarl Allan, to Avesta Jernverks Aktiebolag. Welding electrode. 3,581,054, Cl. 219-146.

Blachez, Loic: *See—*
de Villiers, Rocco Catoggio; Blachez, Loic; Jegou, Francois; Huyghe, Jean; and Vignet, Paul,3,580,818.

Black Clawson Company, The: *See—*
Zink, Stanley C.; and Slane, Joseph J., 3,580,648.

Blackburn, Samuel S., Jr.; and Rickard, Earl K., to Combustion Engineering, Inc. Steam generator using gas recirculation. 3,580,226, Cl. 122-235.

Blackburn, William A.: *See—*
Criner, Gaspard X.; and Blackburn, William A.,3,580,763.

Blackman, Seymour N. Clinical thermometer storage and sterilizing apparatus. 3,580,077, Cl. 73-343.

Blais, Zoel W.; and Shaw, Harold F., to Thayer, Inc.Infant's safety car bed. 3,579,674, Cl. 5-94.

Blake, Trevor H.: *See—*
Sarka, Albert J.; and Blake, Trevor H.,3,580,676.

Blakeslee, A Eugene; Gukelberger, Thomas F., Jr.; and Lyons, Vincent J., to International Business Machines Corporation. Method of growing single crystals. 3,580,732, Cl. 117-106.

Blankenhorn, Gerhard; and Muller, Gunter. Slinger apparatus for lining the interior of a vessel. 3,579,755, Cl. 25-1.

Blaser, Wayne W.: *See—*
Mandrell, Melford E.; and Blaser, Wayne W.,3,580,067.

Blazon, Inc.: *See—*
Green, Martin, 3,580,571.

Blevins, William V., to United States of America, Army. Method for leak testing masks. 3,580,051, Cl. 73-40.

Bliss, E. W., Company: *See—*
Helrigel, Robert A.; Brownell, James R.; Ward, Roderick K.; and Keithley, Harry E., 3,580,558.

Blitz, Saul: *See—*
Hansen, Benth Preben; and Blitz, Saul,3,579,725.

Bloch, Herman S., to Universal Oil Products Company. Hydroxylation of aromatic compounds. 3,580,956, Cl. 260-621.

Bloch, Herman S., to Universal Oil Products Company. Preparation of tetrafluoroethylene ethylenes. 3,580,957, Cl. 260-653.5

Bloomer, Milton D., to General Electric Company. Bias and temperature compensating circuit for tunnel diode oscillators. 3,581,234, Cl. 331-107.

Bloomer-Fiske, Inc.: *See—*
Foldenauer, Ralph M., 3,580,165.

Blosse, Jean Charles Joseph; and Blosse, Michel Jean Joseph. Mechanically-actuated warning device. 3,580,217, Cl. 116-169.

Blosse, Michel Jean Joseph: *See—*
Blosse, Jean Charles Joseph; and Blosse, Michel Jean Joseph,3,580,217.

Blumenschein, Gordon L. Pail having mop wringing grill. 3,579,705, Cl. 15-260.

Bobo, Donald J. Rock polishing rumble. 3,579,921, Cl. 51-164.

Bock, Gerhard; Riccius, Rolf; Weitkamp, Gunter; and Wolf, Bernhard, to Vereinigte Flugtechnische Werke Gesellschaft mit beschrankter Haftung fruher 'Weser' Flugzeugbau/ Fock-Wulf Heinkel-Flugzeugbau Hunefeldstrasse. Retractable main carriage for vertically staring airplanes and airplanes starting on a short runway. 3,580,531, Cl. 244-102.

Bock, John T.Tiltable drummer's seat. 3,580,634, Cl. 297-313.

Bodenhoff, Max, A/S: *See—*
Nielsen, Erik Christian Valeur, 3,580,652.

Bodine, Albert G. Sonic energy in machining operations. 3,580,136, Cl. 90-64.

Bodnarjuk, Frizian Nikolaevich; and Korshunov, Mikhail Alexeevich, to Nauchno-Issledovatelsky Institut Monomerov Dlya Sinteticheskogo. Method for the preparation of aminoalkyl fumerates. 3,580,918, Cl. 260-294.3

Boehmer, Matthew A.; and Maxwell, Jerrold F. Hydraulic fluid. 3,580,847, Cl. 252-75.

Boehringer Mannheim Gesellschaft mit beschrankter Haftung: *See—*
Thiel, Max; Stach, Kurt; Schaumann, Wolfgang; and Ribbentrop, Annemarie, 3,580,907.
Thiel, Max; Kampe, Wolfgang; Stach, Kurt; Schaumann, Wolfgang; and Ribbentrop, Annemarie, 3,580,910.

Boeing Company, The: *See—*
Lancashire, Thomas, 3,580,403.

Boettcher, Stephen A.; and Simonetti, Louis F., to Speedfam Corporation. Polishing machine. 3,579,916, Cl. 51-131.

Boettcher, Stephen A.; and Simonetti, Louis F., to Speedfam Corporation. Polishing machine. 3,579,917, Cl. 51-131.

Bohme, H. O., Inc.: *See—*
Sedley, Bruce S., 3,581,030.

Boissin, Jean-Claude: *See—*
Thibault, Jean-Jacques; and Boissin, Jean-Claude,3,579,998.

Bokros, Jack C., to Gulf Energy & Environmental Systems, Inc. Cardiac valve occluder having a density approximately equal to blood. 3,579,645, Cl. 3-1.

Bond, Harry Laurence Fred; Stubbs, Dennis; and Maltby, Todwick, to Davy and United Engineering Company, Limited. Rolling mills. 3,580,035, Cl. 72-243.

Bondarenko, Alexandr Andreevich; and Klevanov, Fedor Grigorievich. Winding pitch changer of a stator-winding machine. 3,580,090, Cl. 74-96.

Bongers, Piet Frans; and Zanmarchi, Giulio, to U.S. Philips Corporation, mesne. Transmission element for magneto-optical applications, particularly for the modulation of infrared radiation in the wavelength range between 1 and 20 microns. 3,580,664, Cl. 350-320.

Bonner, Barrie: *See—*
Tilly, Lorenz; and Bonner, Barrie,3,580,041.

Bonton, Ira D.; and Sylvester, Willard G., to Apparel Research Foundation, Inc., mesne. Feeding apparatus for nonrigid sheet. 3,580,564, Cl. 271-33.

Boot, Herbert W.; Parr, Leslie R.; and Fudger, Shirley L. W., to USM Corporation. Shoe supports. 3,579,695, Cl. 12-127.

Booth, Edwin F. Attachment for a tined fork. 3,580,625, Cl. 294-59.

Borden, Inc.: *See—*
Davis, Glenn V., 3,579,950.

Borg Warner Corporation: *See—*
Mac Phee, Colin A. A.; and Haene, Antonio C. P., 3,580,743.

Borg-Warner Corporation: *See—*
Albertson, Clarence E.; and Krueger, Robert H., 3,580,759.
Grabowski, Thomas S., 3,580,730.
Jones, Johnny W., 3,581,179.
Mieras, Spencer H., 3,580,108.

Born, Dieter; Stech, Peter; and Huebner, Werner, to Klein Schanzlin & Becker A. G. Contact-free hydrostatic seal. 3,580,587, Cl. 277-3.

Bosch, Paul; and Kobald, Walter, to Bosch, Robert, G.m.b.H. Regulated hydraulic drive control apparatus. 3,579,979, Cl. 60-19.

Bosch, Robert, G.m.b.H.: *See—*
Bosch, Paul; and Kobald, Walter, 3,579,979.
Busse, Herbert, 3,579,987.
Schupp, Karl; and Weismann, Hans, 3,581,034.
Stams, Dietrich, 3,579,978.

Bosley, Dewey R.: *See—*
Tidball, Robert A.; King, William M.; Bosley, Dewey R.; and Jennings, Charles M.,3,580,816.

Bossetta, Gaspar Robert. Automatic grocery bag filling apparatus with inner and outer tray. 3,579,959, Cl. 53-260.

Boswell, George T., to Susquehanna Corporation, The. Fuze with impact switch. 3,580,176, Cl. 102-75.

Bouhot, Marcel. Cock. 3,580,541, Cl. 251-174.

Bouladon, Gabriel; and Zuppiger, Paul, to Battelle Memorial Institute. Variable speed transport apparatus. 3,580,182, Cl. 104-25.

Boultinghouse, Harold D., to Phillips Petroleum Company. Method of forming nonwoven articles by fusing strands to a base. 3,580,761, Cl. 156-72.

Bourdon, Claude: *See—*
Robert, Andre; Bourdon, Claude; and Le Goer, Jean Luc,3,580,681.

Bowie, Philip A.: *See—*
Plonsker, Harvey R.; Vaughn, Reuben F.; Lang, Felix C.; Aurich, Christoph W.; and Bowie, Philip A.,3,579,761.

Bowles Fluidics Corporation: *See—*
Bauer, Peter; and Mentzer, William R., Jr., 3,580,499.

Boxman, Raymond L., to General Electric Company. Triggered vacuum gap device with means for reducing the delay time to arc-over the main gap. 3,581,142, Cl. 313-162.

Boyce, William C.; and Matza, Edward C., to LTV Aerospace Corporation. Maneuvering unit. 3,580,528, Cl. 244-1.

Boyle, Martin A., to Alpha Metals Inc. Cover for coplanar walls of an open top circuit package. 3,579,817, Cl. 29-588.

Boyle, Willard S.; and Morton, Jack A., to Bell Telephone Laboratories, Incorporated. Cold cathode structure comprising semiconductor whisker elements. 3,581,151, Cl. 317-234.

Bradbury, Cyril Henry, to Simms Group Research and Development Limited. Valve mechanisms for use with internal combustion engines. 3,580,231, Cl. 123-32.

Bradshaw, Christopher Patrick Cadman: *See—*
Keen, Ian Montgomery; Craig, Peter James; and Bradshaw, Christopher Patrick Cadman,3,580,960.

Brady, Lynn J.: *See—*
Rozema, Arthur L.; Brady, Lynn J.; and Barden, Wayne A.,3,579,819.

Brandenberg, Karl A., to Aro Corporation, The. Fluid proximity sensor and drive mechanism to control distance of an object from the sensor. 3,580,137, Cl. 91-50.

Brandenberg, Karl A., to Aro Corporation, The. Comparator circuit for digital positioning control. 3,580,266, Cl. 137-81.5

Brandenberg, Karl A., to Aro Corporation, The. Work control device for fluid driven apparatus. 3,580,285, Cl. 137-624.2

Brandts, Theodorus G.: *See—*
Pickup, John; Brandts, Theodorus G.; and Lichtenberger, Joseph A.,3,580,704.

Braun Aktiengesellschaft: *See—*
Scheibel, Josef, 3,580,096.

Brauner, Edward J.: *See—*
Reddel, Robert J.; and Brauner, Edward J.,3,581,283.

Bray, Aaron C., Jr. Device for holding pleated material. 3,579,877, Cl. 38-12.

Bray, Nicholas P. Forward planning apparatus. 3,579,884, Cl. 40-110.

BRD, Inc.: *See—*
Hallett, Thomas E., 3,579,861.

Breitmeyer, Richard; and Amann, Karl, to Bauknechte GEA Electrotechnische Fabriken Gesellschaft mit beschrankter Haftung. Apparatus for heating a storage core of a heat storing furnace. 3,581,059, Cl. 219-378.

Brennan, Brian L.: *See—*
Brennan, Edward N.; and Brennan, Brian L.,3,580,349.

Brennan, Edward N.; and Brennan, Brian L. Portable motorized cart. 3,580,349, Cl. 180-27.

Brian, Michael, to United States of America, Navy. An improved tilt switch. 3,581,031, Cl. 200-61.47

Bridge, John. System and apparatus for holding freight containers to vehicles and the like. 3,580,185, Cl. 105-366.

Bridgestone Tire Company Limited: *See—*
Onishi, Akira; Anzai, Shiro; Irako, Koichi; Fujio, Ryota; Hayakawa, Yoshihiro; and Miyamoto, Shoji, 3,580,895.
Yoshimoto, Toshio; Narumiya, Tsuneaki; Kaneko, Seiya; Yoshii, Hiroshi; and Takamatsu, Tetsuya, 3,580,897.

Brignet, Roger Raoul. Direct current static transformer. 3,581,148, Cl. 315-227.

Brinckman, Eric Maria, to Gevaert-Agfa N.V. Thermographic recording process. 3,580,719, Cl. 96-27.

Brinkerhoff, Joris M.; Hunerwadel, Jean L.; and Sellers, Francis B., to Panametrics, Inc. X-ray fluorescence measuring system employing balanced X-ray filters and circuit means to vary the effective relative transmission thereof. 3,581,087, Cl. 250-51.5

Brinkman, John D.: *See—*
Paradise, Ronald Y.; Masel, Marvin; Naydan, Bob N.; and Brinkman, John D.,3,581,304.

Brinkmann, Ludwig; Cherdron, Harald; and Herwig, Walter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Thermoplastic polyester molding compositions containing olefin-vinyl ester copolymers. 3,580,965, Cl. 260-873.

Bristol-Myers Company: *See—*
Behnke, John M., 3,580,875.

British Cast Iron Research Association: *See—*
Edwards, Albert, 3,580,326.

British Petroleum Company Limited, The: *See—*
Keen, Ian Montgomery; Craig, Peter James; and Bradshaw, Christopher Patrick Cadman, 3,580,960.

Britnev, Georgy Pavlovich: *See—*
Beresnev, Boris Ivanovich; Bulychev, Dmitry Konstantinovich; Martynov, Evgeny Dmitrievich; Ryabinin, Jury Nikolaevich;

Rodionov, Kuzma Petrovich; Maltsev, Mikhail Vasilievich; Britnev, Georgy Pavlovich; and Kocherov, Anatoly Vasilievich,3,580,019.

Britt, Richard G.; and Loughridge, Frederick A., to Sylvania Electric Products, Inc. Particle tube fusion furnace. 3,580,710, Cl. 65-144.

Brokloff, Robert W.: *See—*
Allison, Robert W., Jr.; Brokloff, Robert W.; and Woodyard, John R.,3,580,822.

Brooks, Ray G. Actuating mechanism for pressurized fluid dispenser. 3,580,432, Cl. 222-402.13

Brooks, William. Shift register. 3,581,296, Cl. 340-174.5

Broussard, Leo P.; Dickson, Leon L., Jr.; and Gardenier, Wilhelmus J. G., to Shell Oil Company. Method for preventing deformation in a well casing. 3,580,334, Cl. 166-250.

Brouwer, Charles W., to Leesona Corporation. Bobbin orienting. 3,580,374, Cl. 193-43.

Brouwer, Frans; and Sobchak, Frank L., to Stewart-Warner Corporation. Two speed drive mechanism for facsimile recording system or the like. 3,580,110, Cl. 74-812.

Brouwer, Frans; and Sobchak, Frank L., to Stewart-Warner Corporation. Facsimile scanner assembly. 3,581,001, Cl. 178-7.6

Brown & Williamson Tobacco Corporation: *See—*
Ballard, Francis J., Jr., 3,580,644.

Brown, Archer W.; Montgomery, James L.; Beer, Walter A.; and Mero, Thomas J., to American Hoist & Derrick Company. Disc brake for track driven machine. 3,580,345, Cl. 180-9.2

Brown, Cicero C. Automatic rotary slips. 3,579,752, Cl. 24-263.

Brown, David Argent. Toy watercraft. 3,579,900, Cl. 46-93.

Brown, David N. Electronic marker actuator. 3,580,340, Cl. 172-126.

Brown, Fred P., Jr.: *See—*
Rohdin, Howard A.; and Brown, Fred P., Jr.,3,580,442.

Brown, Gaylord W., to Koehring Company. Extruder-molder. 3,579,723, Cl. 18-4.

Brown, Ian McLaren, to McDonnell Douglas Corporation. Microwave resonance systems employing a bimodal cavity. 3,581,190, Cl. 324-0.5

Brown, Ivor James Stewart; Clarkson, Richard; Crossley, Neville Stanton; and McLoughlin, Bernard Joseph, to Imperial Chemical Industries, Limited. 3(Aminoalkoxycarbonylalkylene)steroid derivatives. 3,580,905, Cl. 260-210.5

Brown, Kenneth William, to National Research Development Corporation. Welding apparatus. 3,581,051, Cl. 219-131.

Brown, Kenneth William; and Balchin, Nigel C., to National Research Development Corporation. Electric arc welding systems. 3,581,050, Cl. 219-130.

Brown, Leonard Carlton, to United States of America, Atomic Energy Commission, mesne. Utilizing penetrating radiation. 3,581,090, Cl. 250-83.3

Brown, Richard L.: *See—*
Shuster, Joseph; and Brown, Richard L.,3,580,379.

Brownell, James R.: *See—*
Helrigel, Robert A.; Brownell, James R.; Ward, Roderick K.; and Keithley, Harry E.,3,580,558.

Browning, Gordon D.: *See—*
Morey, Dennison H., Jr.; Silva, Melvin; and Browning, Gordon D.,3,581,197.

Browning, Stanley Albert Charles: *See—*
Gunyou, John Christie; and Browning, Stanley Albert Charles,3,579,955.

Bruckner-Maschinenbau Gernot Bruckner: *See—*
Fraitzl, Raimund, 3,580,451.

Bryan Donkin Company Limited, The: *See—*
Farrer, Sydney, 3,580,271.

B.S.A. Tools Limited: *See—*
Austin, Eric R.; and Bill, Eric G., 3,580,129.

Buchanan, Richard G.: *See—*
Bennett, George K.; and Buchanan, Richard G.,3,579,870.

Buchner, Norbert; and Domke, Klaus, to Fr. Hesser Maschinenfabrik Aktiengesellschaft. Apparatus for reducing the atmospheric oxygen content of fluent solid pourable materials by gas exchange. 3,579,945, Cl. 53-112.

Buck, Jack B. Dental X-ray film holder. 3,580,159, Cl. 95-100.

Buck, John R.: *See—*
Vogel, Alvin R.; Moore, Douglas A.; Folan, Martin P.; and Buck, John R.,3,581,014.

Buckley, Trevor, 1/2 to Frowds Limited. Radar systems. 3,581,310, Cl. 343-7.7

Bucyrus-Erie Company: *See—*
Barber, Donald E., 3,581,170.
Calud, Romeo T.; Hansbrough, David L.; and Zaumseil, Dean R., 3,581,169.

Budd Company, The: *See—*
Dean, Albert G., 3,580,557.

Budzyn, Boleslaw L.: *See—*
Arnould, Marcel M.; Ward, John C., Jr.; Ray, William Floyd; and Budzyn, Boleslaw L.,3,580,386.

Buege, Dennis R.: *See—*
Stouffer, James R.; Buege, Dennis R.; and Gillis, Wayne A.,3,579,716.

Buehrle, William E., Jr.; and Woodard, Gerald F. Emergency warning and identification apparatus for two-way radio communication system. 3,581,208, Cl. 325-64.

Bulychev, Dmitry Konstantinovich: *See—*
Beresnev, Boris Ivanovich; Bulychev, Dmitry Konstantinovich; Martynov, Evgeny Dmitrievich; Ryabinin, Jury Nikolaevich; Rodionov, Kuzma Petrovich; Maltsev, Mikhail Vasilievich; Britnev, Georgy Pavlovich; and Kocherov, Anatoly Vasilievich,3,580,019.

Bunker-Ramo Corporation, The: *See—*
Knitter, Heinz; and Veszelik, Josef, 3,581,271.
Rothfuss, Helmut; and Rode, Horst, 3,580,985.
Yopp, Robert S.; and Kraft, Melvin G., 3,581,272.

Burdick, Glen A., to Sylvania Electric Products, Inc. Method of fabricating cathode ray tube screen. 3,579,768, Cl. 29-25.13

Burger, Erich: *See—*
Hieber, Fritz; Burger, Erich; and Huber, Hans-Peter,3,580,675.

Burke, William R.; and Mc Call, Frank S., to Union Camp Corporation. Collapsible cellular box partitions. 3,580,471, Cl. 229-15.

Burkert, Adolf: *See—*
Piazza, Gian-Franco; Streit, Rudolf; Ulrich, Martin; Laber, Werner; Burkert, Adolf; Tron, Manfred; and Waluga, Wolfgang,3,581,183.

Burman, Per Aron, to Burrough Corporation. Component removing tool. 3,579,795, Cl. 29-252.

Burmeister, Fred; Enkvist, Ernst; Johansson, Bengt; and Kostilainen, Valter, to Oy Wartsila AB. Arrangement in ships. 3,580,204, Cl. 114-67.

Burnham, Clifford Henry. Copy holder. 3,579,888, Cl. 40-356.

Burns, Alvin G.; and Miller, Sheldon M. Inflatable packing for stuffing boxes. 3,580,586, Cl. 277-3.

Burnside, Ernest. Quickly-removable ignition coil installation for automobile theft prevention. 3,581,259, Cl. 336-90.

Burrough Corporation: *See—*
Burman, Per Aron, 3,579,795.

Burroughs Corporatinon: *See—*
Akst, Harold, 3,581,268.

Burroughs Corporation: *See—*
Behr, Michael I.; Coon, Lewis B., Jr.; and Bickel, Charles E., 3,581,297.
Billawala, Shahbuddin A., 3,581,298.
Di Paolo, Peter T., Jr.; and Carbine, Joseph C., 3,579,778.
Kupsky, George A., 3,580,654.
Siu, Paul Y., 3,581,235.
Waltz, Richard B., 3,581,074.

Bushey, Donald H.: *See—*
Heywood, Vincent E.; Bushey, Donald H.; and Chapman, William A., Jr.,3,579,944.

Bushuev, Vladimir Pavlovich; Gubin, Georgy Viktorovich; Zolotarev, Petr Semenovich; Sorokin, Vladimir Andreevich; Palamarchuk, Vladimir Ivanovich; and Dmitrenko, Viktor Makarovich. Appliance for supplying gas into a predetermined zone. 3,580,554, Cl. 263-33.

Busse, Ewald A. Device for mixing combustible components recovered from exhaust gases with fuel charge of carburetor. 3,580,233, Cl. 123-119.

Busse, Herbert, to Bosch, Robert, G.m.b.H. Adjustable hydraulic operation arrangement. 3,579,987, Cl. 60-52.

Butler, Kenneth, to Pfizer Inc.Process for the conversion of α-carboaryloxy- benzylpenicillins to α-carboxybenzylpenicillins. 3,580,908, Cl. 260-239.1

Butler National Corporation: *See—*
Perkins, Earl Stuart, 3,580,080.

Buzhinsky, Igor Mikhailovich; Zhabotinsky, Mark Efremovich; Rudnitsky, Jury Petrovich; Tsapkin, Vadim Vasilievich; Tsapkina, Irma Vyacheslavovna; and Ellert, Georgy Vladimirovich. Active material for lasers. 3,580,859, Cl. 252-301.1

Bykov, Leonid Alexandrovich: *See—*
Khimich, Georgy Lukich; Niskovskikh, Vitaly Maximovich; Varaxin, Alexei Ivanovich; Gelfenbein, Evgeny Jukhimovich; Bykov, Leonid Alexandrovich; Litvinov, Anatoly Ivanovich; and Karlinsky, Stanislav Evgenievich,3,580,327.

Byrne Doors, Inc.: *See—*
Wetter, Allan E., 3,579,910.

Cadotte, John E.; and Francis, Peter S., to United States of America, Interior. Ultrathin semipermeable membrane. 3,580,841, Cl. 210-23.

Cagle, Buddy L., Sr. Cable feed device. 3,580,448, Cl. 226-127.

Calamvotsakis, Constantine P. Box game. 3,580,582, Cl. 273-139.

California Car Wash Systems, Inc.: *See—*
Haley, David Merl, 3,579,700.

Calmec Extruform Limited: *See—*
Schneider, Jack Marvin, 3,580,773.

Calud, Romeo T.; Hansbrough, David L.; and Zaumseil, Dean R., to Bucyrus-Erie Company. Reversing control for an induction motor. 3,581,169, Cl. 318-214.

Camdex, Inc.: *See—*
Leich, Robert A., 3,580,128.

Cameron, Donald P., to Pfizer Inc. Heterocyclic mesoionic compounds. 3,580,921, Cl. 260-302.

Campbell, Albert B., to Royal Products Company. Lather machine. 3,580,863, Cl. 252-359.

Campbell, Edwin R.: *See—*
Comstock, David W.; and Campbell, Edwin R.,3,581,182.

Campbell, J. Allen; and Babcock, John C., to Upjohn Company, The. 7α-and 7β-Methyl-3α, 5α-cycloandrostenes, 6- methyl derivatives thereof and the 19- non analoques of the foregoing. 3,580,937, Cl. 260-397.4

Campbell, Ray J. Mailbox. 3,580,491, Cl. 232-35.
Campbell, Thomas A.: *See—*
Underwood, Ray L.; and Campbell, Thomas A.,3,580,627.
Canadian Cedar Inc.: *See—*
Fox, Edward L., Jr., 3,580,311.
Canadian International Paper Company,: *See—*
Hamilton, Douglas D., 3,580,308.
Hoffmann, Wolfgang; and Wick, Paul, 3,579,956.
Caneer, Ralph A.; Anderson, William J.; Morgan, Bert B.; and Goodman, Jerry M., to Northrop Carolina, Inc. Texturizing apparatus. 3,579,760, Cl. 28-1.7
Cannon, Lester E.; Tindall, John M.; and Taylor, Howard N., to Folding Cartons, Inc. Carton for use with packaging apparatus. 3,580,476, Cl. 229-37.
Cannon, Richard L.; and Smith, Leonard R. D., to Dale Electronics, Inc. Adjustably mounted player piano key actuating assembly. 3,581,254, Cl. 335-255.
Cannon, Richard L.; and Smith, Leonard R. D., to Dale Electronics, Inc. Mounting means for player piano key actuating assembly. 3,581,255, Cl. 335-255.
Cano, Serafin: *See—*
Rocha, Octavio; and Cano, Serafin,3,580,228.
Canon Camera Co., Ltd.: *See—*
Nagao, Kazuyoshi, 3,581,102.
Canon Camera Kabushiki Kaisha: *See—*
Tanaka, Hiroshi; and Ishihara, Masayoshi, 3,581,149.
Caplin, Harry B. Collapsible hand truck. 3,580,600, Cl. 280-36.
Carbine, Joseph C.: *See—*
Di Paolo, Peter T., Jr.; and Carbine, Joseph C.,3,579,778.
Carbon, Erich; and Wagner, Wolfgang, to Volkswagen Aktiengesellschaft. Lock for safety belts. 3,579,750, Cl. 24-230.
Cardwell, Lonnie D.; Esenwein, Fred T.; and Pierard, Arthur E., to United States of America, Navy, mesne. Rocket burn rate testing device. 3,580,049, Cl. 73-35.
Caretta, Renato: *See—*
Pacciarini, Antonio; and Caretta, Renato,3,580,766.
Caribbean Holdings Ltd.: *See—*
Dobell, Curzon; and Wilson, Leslie P., 3,580,461.
Carlo Gavazzi S.p.A.: *See—*
Bini, Giancarlo; and Tamoni, Gianfranco, 3,580,284.
Carlson, Gerald J., to General Electric Company. Tool surface temperature measuring apparatus. 3,579,775, Cl. 29-96.
Carr, Barney J., deceased0 (by Carr, Elisabeth Helen; administratrix), to Kaman Sciences Corporation, mesne. DC operated positive ion accelerator and neutron generator having an externally available ground potential target. 3,581,093, Cl. 250-84.5
Carr, Elisabeth Helen: *See—*
Carr, Barney J.,3,581,093.
Carraher, Delbert V.: *See—*
Issott, John W.; Honkala, Harold E.; and Carraher, Delbert V.,3,580,037.
Carrier Corporation: *See—*
Ballard, Gary W., 3,580,013.
Czuszak, Charles C., 3,580,691.
Eisberg, Keith V., 3,580,001.
Fisher, John T., 3,580,002.
Hale, Harry T., 3,580,005.
Smith, Donald R.; and Cavestany, Adrian V., 3,580,512.
Walters, Frank F., 3,580,028.
Carroll, Alton P., Jr.: *See—*
Carter, Ernest P.; Bell, Robert P., Jr.; and Carroll, Alton P., Jr.,3,580,296.
Carroll Plastics Corporation: *See—*
Pieszak, Franklin B.; and Knaggs, Marvin G., 3,580,467.
Carson, Arthur N., to Carson Laboratories, Inc. Hologram apparatus and method. 3,580,656, Cl. 350-3.5
Carson Laboratories, Inc.: *See—*
Carson, Arthur N., 3,580,656.
Carter, Clarence F., to Carter Engineering Company. Method and apparatus for feeding and compacting finely divided particulate material. 3,580,419, Cl. 222-1.
Carter Engineering Company: *See—*
Carter, Clarence F., 3,580,419.
Carter, Ernest P.; Bell, Robert P., Jr.; and Carroll, Alton P., Jr., to Monsanto Company. Articles woven from non-extensible materials. 3,580,296, Cl. 139-425.
Caruel, Jacques Emile Jules; Quillevere, Herve Alain; and Bauger, Louis, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Improvements in or relating to combustion chambers. 3,579,983, Cl. 60-39.71
Casebeer, Oran T., to Eastman Kodak Company. Automatic exposure control device. 3,580,157, Cl. 95-64.
Cassagne, Pierre, to Compagnie Francaise de Telivision. Magnetic recording and reproducing apparatus for color television signals using a frequency modulated subcarrier for the transmission of the color information. 3,581,007, Cl. 178-5.4
Cassella Farbwerke Mainkur Aktiengesellschaft: *See—*
Heid, Christian; and Keil, Karl-Heinz, 3,580,851.
Cassill, William Guy, to Mead Corporation, The. Alignment system for arrays of a noncontacting printer. 3,580,515, Cl. 239-536.
Cast, Adolf; and Schwarz, Heinz, to Reich, Karl M., Maschinenfabrik. Fastener driving device operating means. 3,580,455, Cl. 227-8.
Castro, Luis F.: *See—*
Dean, Michael R.; Castro, Luis F.; and Salerni, John V.,3,580,332.
Catherin, Jean-Michel, to Compagnie General d'Electricite. Laser gyrometer system. 3,579,846, Cl. 33-204.
C.A.V. Limited: *See—*
Hazel, Jack A., 3,580,118.
Cavalleri, Bruno; Bellasio, Elvio; and Testa, Emilio, to Lepetit S.p.A.-Gruppo per la Ricerca Scientifica e la Produzione Chimica Farmacettica. Pharmacologically active diethyl-(2-dibenzofuramyl)-malonate. 3,580,932, Cl. 260-346.2
Cavestany, Adrian V.: *See—*
Smith, Donald R.; and Cavestany, Adrian V.,3,580,512.
Celanese Corporation: *See—*
Kennedy, Daniel M., Jr.; and Zellner, Carl Naeher, 3,580,973.
McAndrew, Francis B.; Price, Martin B.; and Berardinelli, Frank M., 3,580,928.
Cenco Medical/Health Supply Corporation: *See—*
Bender, Charles E.; and Fraser, Douglas S., 3,580,812.
Centre Electronique Horloger S. A.: *See—*
Omlin, Luc, 3,581,126.
Centre Technique Industriel dit: Institut Textile de France: *See—*
Voisin, Eugene; Raisin, Jean-Pierre; and Delair, Jean-Paul, 3,580,012.
Cer Preduzece Termo-Tehnickih Uredajaja I Montaza: *See—*
Ivackovic, Nikola; and Urosevic, Milija, 3,579,852.
Cerrito, Michael: *See—*
McClure, Arthur A., 3,580,690.
Cervenka, Joseph J.; and Hetzel, Marvin E. Machine for applying lugs or the like to bobbins or the like. 3,579,787, Cl. 29-203.
Cessna Aircraft Company: *See—*
Ryan, Donald P., 3,581,019.
Ceyzeriat, Louis; Gaignon, Maurice; and Lefort, Marcel, to Rhone-Poulenc S.A. Aminosilanes and compositions containing them. 3,580,939, Cl. 260-448.2
Chaban, Michael J., Jr., to Standrad International Corporation. Stock feed apparatus. 3,580,449, Cl. 226-150.
Challenge Machinery Company, The: *See—*
Westra, Dan P.; and Siewert, John J., 3,580,123.
Chambers, Robert F. Eyelet and lug assembly. 3,580,621, Cl. 287-101.
Chambers, William W., to Robertshaw Controls Company. Temperature control system providing full wave conduction into temperature change apparatus. 3,581,061, Cl. 219-499.
Chang, Robert W. Joint setting of demodulating carrier phase, sampling time and equalizer gain parameters in synchronous data transmission systems. 3,581,207, Cl. 325-42.
Chapman, William A., Jr.: *See—*
Heywood, Vincent E.; Bushey, Donald H.; and Chapman, William A., Jr.,3,579,944.
Cheeseman, Ian Clifford; and Smith, Michael Charles George, to United Kingdom of Great Britain and Northern Ireland, Minister of Technology in Her Britannic Majesty's Government of the. Boundary layer control devices. 3,580,693, Cl. 416-90.
Chemical Separation Corporation: *See—*
Higgins, Irwin R., 3,580,842.
Cheney, Oliver F., to Delaware Valley Armaments, Inc. Method and apparatus for testing rotation- responsive delay devices. 3,580,046, Cl. 73-5.
Cheng, Chao-Shing; and Evans, Francis E., to Allied Chemical Corporation. Stable liquid dicarboxylic acid anhydride composition. 3,580,857, Cl. 252-182.
Cheng, Chao-Shing: *See—*
Evans, Francis E.; and Cheng, Chao-Shing,3,580,858.
Cherdron, Harald: *See—*
Brinkmann, Ludwig; Cherdron, Harald; and Herwig, Walter,3,580,965.
Chermack, Robert W. Glass filler. 3,580,304, Cl. 141-244.
Cherry, Gene F. Military ribbon holder. 3,579,881, Cl. 40-1.5
Chery, Walter V., to Textron Inc. Slide fastener device and method of making the same. 3,579,748, Cl. 24-205.1
Chesapeake and Ohio Railway Company, The: *See—*
Payseure, Lawrence A., 3,581,071.
Cheslin, Sigmund: *See—*
Schriever, Fred G.; and Cheslin, Sigmund,3,580,779.
Chetwynd, Earl G.: *See—*
Griffin, Anthony L.; and Chetwynd, Earl G.,3,579,878.
Chevron Research Company: *See—*
Furby, Neal W.; Godfrey, Douglas; and Peeler, Robert L., 3,580,848.
Hughes, Walter D., 3,580,263.
Parker, Phillip H., 3,580,769.
Rhodes, David R., 3,580,832.
Wyrick, Leon M., 3,580,538.
Chicago Lock Co.: *See—*
Kerr, William J., 3,580,016.
Chicago Roller Skate Company, The: *See—*
Keltz, Lawrence W.; and Marek, Charles, 3,579,688.
Ware, Gordon K., 3,580,594.
Ware, Gordon K.; Diehr, Hans Joachim; Merten, Rudolf; Piechota, Helmut; and Uhlig, Konrad, 3,580,890.
Child Guidance Toys Inc.: *See—*
Genin, Robert, 3,579,904.
Chopard, Remy: *See—*
Besson, Rene; and Chopard, Remy,3,579,975.
Choquette, Rita Marie. Bath tub for invalids. 3,579,658, Cl. 4-173.
Christensen, Paul M., to Arrow-Hart, Inc. Enclosed switch with cover-carried operator and interlock mechanism. 3,581,032, Cl. 200-50.

Chrysler Corporation: *See—*
Gau, Leonard P., 3,579,981.
Sarto, Jorma O., 3,580,232.
Verdoodt, Marcel E.; and Michalke, Klaus A., 3,579,698.

Chuhta, Thomas A., to Eastman Kodak Company. Web transport apparatus. 3,580,452, Cl. 226-191.

Churchill, John W.; Kober, Ehrenfreid H.; Scott, Peter H.; and Smith, Curtis P., to Olin Mathieson Chemical Corporation. Preparation of fluoroanilines. 3,580,951, Cl. 260-580.

Chute, Richard; and Berryman, Charles O., to Eaton Yale & Towne, Inc. Inflatable safety apparatus. 3,580,603, Cl. 280-150.

Ciba Limited: *See—*
Angliker, Hans-Joerg, 3,580,902.
Anliker, Rudolf; Duennenberger, Max; Schmid, Karl; and Siegrist, Adolf Emil, 3,580,924.

Cichy, Raymond G.: *See—*
Barnes, Gerald L.; Cichy, Raymond G.; and Adams, Gerald E.,3,580,767.

Cimber, Hugo S. Aspirator. 3,580,255, Cl. 128-276.

Cincinnati Butchers' Supply Company, The:*See—*
Schmidt, Carl Oscar, Jr., 3,579,715.

Cincinnati Milacron Inc.: *See—*
Pfister, Stanley A., 3,579,812.

Ciriack, Gunter; Eckert, Georg; and Hofmann, Horst, to Siemens Aktiengesellschaft. Grid electrode for electronic tubes. 3,580,739, Cl. 117-217.

Ciriello, John: *See—*
Belford, John F.; Gibeau, Donald E.; and Ciriello, John,3,581,247.

C.I.T.-Compagnie Industrielle des Telecommunications: *See—*
Leostic, Joseph, 3,581,116.

C. I. T. Compagnie, Industrielle des Telecommunications: *See—*
Berman, Leon, 3,581,236.

Cities Service Company: *See—*
Harris, Dale K., 3,580,279.
Huskey, Joseph E., 3,580,060.

Claar, Hermann, to Eastman Kodak Company. Control mechanism for motion picture projector. 3,580,668, Cl. 352-194.

Clachan, Margaret L.; McGrail, Patrick T.; and Shephard, Basil R., to Bexford Limited. Antistatic film base material and process for preparing same. 3,580,734, Cl. 117-138.8

Clark Equipment Company: *See—*
Stickle, Stanley A., 3,580,373.

Clark, James A., to Bausch & Lomb Incorporated. Curve generating linkage. 3,580,088, Cl. 74-1.

Clark, Robert S.: *See—*
Cunningham, James A.; and Clark, Robert S.,3,581,161.

Clarke, Michael Raymond; and Filipowicz, Leon, to Balm Paints Limited. Dispersions of particulate solids in either lipophilic or hydrophilic liquids stabilized with a polymeric ampipathic stabiliser and process for preparing said dispersions. 3,580,880, Cl. 260-29.6

Clarke, Robert E. Cream dispenser with pleated walls and lip type opening. 3,580,427, Cl. 222-215.

Clarke, Terence J.L.; and Evans, Ivor, deceased0 (by Evans, Josie V.; administratrix), to United Shoe Machinery Corporation. Method for coating work pieces with thermoplastic material. 3,580,774, Cl. 156-247.

Clarkson, Richard: *See—*
Brown, Ivor James Stewart; Clarkson, Richard; Crossley, Neville Stanton; and McLoughlin, Bernard Joseph,3,580,905.

Clevite Corporation: *See—*
Arndt, John P.; and Franklin, Edmond G., 3,581,125.

Clopay Corporation: *See—*
Gossling, Robert C.; and Armstrong, George, 3,580,323.

Coad, Brian C., to Texas Instruments, Incorporated. Manufacture of interiorly coated tubing. 3,579,772, Cl. 29-33.

Coes, Loring, Jr., to Norton Company. Vibratory grinding method. 3,579,927, Cl. 51-281.

Coffey, H. Franklin; and Powers, Samuel T., to Lovelace Foundation for Medical Education and Research. Wheelchair attachment. 3,580,591, Cl. 280-5.32

Colbert, William V.: *See—*
Hill, Fredrick L.; Gates, Lauren W.; and Colbert, William V.,3,579,968.

Cole, John M., to Thomas & Betts Corporation. Fastener anchored in honeycomb panel. 3,579,942, Cl. 52-615.

Coleman, Charles; and Weaver, Boyd S., to United States of America, Atomic Energy Commission. Selective stripping of plutonium from organic extracts. 3,580,705, Cl. 23-341.

Colley, Jean E.: *See—*
Yeo, Roland J.; and Colley, Jean E.,3,581,025.

Colombo, Americo; and Ronchetti, Ugo. Odontological instrument. 3,579,833, Cl. 32-27.

Combustion Engineering, Inc.: *See—*
Blackburn, Samuel S., Jr.; and Rickard, Earl K., 3,580,226.

Commercial Solvents Corporation: *See—*
Griffith, George L., 3,580,750.
Griffith, George L., 3,580,751.
Griffith, George L., 3,580,752.
Griffith, George L., 3,580,753.
Hidy, Phil, 3,580,811.
Hidy, Phil H.; and Young, Vernon V., 3,580,929.

Commissariat a l'Energie Atomique:*See—*
de Villiers, Rocco Catoggio; Blachez, Loic; Jegou, Francois; Huyghe, Jean; and Vignet, Paul, 3,580,818.
Van Zurk, Robert, 3,581,118.

Compagnie des Ateliers et Forges de La Loire (St. Chamond, Firminy, St. Etienne, Jacob-Holtzes): *See—*
Gay, Pierre, 3,580,033.

Compagnie du Filage des Metaux et des Joints Curty: *See—*
Andreassian, Jean-Michel, 3,580,038.

Compagnie Francaise de Telivision: *See—*
Cassagne, Pierre, 3,581,007.

Compagnie General d'Electricite:*See—*
Catherin, Jean-Michel, 3,579,846.

Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie: *See—*
Massoubre, Jean-Marie, 3,580,899.

Computer Modem Corporation: *See—*
Arbuckle, Timothy, 3,581,279.

Comstock, David W.; and Campbell, Edwin R., to United Aircraft Corporation. Digital indicator step motor system. 3,581,182, Cl. 318-685.

Consolidated Packaging Machinery Corporation: *See—*
Riesenberg, James H., 3,580,302.

Consolidated Paper (Bahamas) Limited: *See—*
Pickup, John; Brandts, Theodorus G.; and Lichtenberger, Joseph A., 3,580,704.

Construction Machinery Company: *See—*
Fry, William H.; and Zerba, Lawrence G., 3,580,440.

Container Corporation of America: *See—*
Koboldt, Melvin A., 3,580,481.

Continental Can Company: *See—*
Vercillo, Peter A., 3,580,201.

Continental Can Company, Inc.: *See—*
French, Richard P., 3,580,480.
McDevitt, James A., 3,580,468.
Weiss, Arthur J., 3,580,479.

Continental Carbon Company: *See—*
Middlebrooks, Ollie, 3,579,717.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Menell, Hans; and Scheithauer, Walter, 3,580,318.

Continental Industries, Inc.: *See—*
Morain, Eldon W., 3,579,826.

Continental Oil Company: *See—*
Sparlin, Derry D., 3,580,338.
Whitfill, Donald L., 3,580,826.

Contraves AG: *See—*
Stutz, Theo; and Mueller, Werner, 3,581,301.

Convex Limited: *See—*
Zysman, Milton, 3,579,773.

Conwed Corporation: *See—*
Shreve, Robert N., 3,579,774.

Cook, Allen D.; and Szabo, Kalman T., to Smith Kline & French Laboratories. Small animal milking apparatus. 3,580,220, Cl. 119-14.01

Cook, Edward H., Jr.: *See—*
Currey, John E.; Grotheer, Morris P.; and Cook, Edward H., Jr.,3,580,824.

Cook, Richard E.: *See—*
Orn, Vernon B.; and Cook, Richard E.,3,579,895.

Coombes, William S.: *See—*
Adams, Richard C.; Coombes, William S.; and Lerardo, Domenic,3,580,120.

Coon, Lewis B., Jr.: *See—*
Behr, Michael I.; Coon, Lewis B., Jr.; and Bickel, Charles E.,3,581,297.

Cooper, Beresford B., to Entwistle Company, The. Extrusion head. 3,579,731, Cl. 18-13.

Cooper, Dester P., Jr., to Bell & Howell Company. Rear projection viewing screen for close viewing. 3,580,661, Cl. 350-128.

Cooper, Hugh, Jr. Anatomy relating device for dentists. 3,579,832, Cl. 32-17.

Cooper, Roy M., to Olin Mathieson Chemical Corporation. Mercury cell having rotating anode. 3,580,833, Cl. 204-212.

Copley, Stephen M.; Giamei, Anthony F.; Hornbecker, Merton F.; and Kear, Bernard H., to United Aircraft Corporation. Double-oriented single crystal castings. 3,580,324, Cl. 164-60.

Corken Pump Company: *See—*
Kennedy, Garth P.; and Nelson, William E., 3,580,420.

Cornell Aeronautical Laboratory, Inc.: *See—*
Martin, Francis C.; and Nicklas, James P., 3,581,281.

Cornell Research Foundation, Inc.: *See—*
Stouffer, James R.; Buege, Dennis R.; and Gillis, Wayne A., 3,579,716.

Corning Glass Works: *See—*
Samuels, Walter E. D., 3,579,879.
Steinberg, David R., 3,580,075.

Corry, Alfred Reginald; Guest, Dorothy Joyce; and Williamson, William Ian, to Imperial Chemical Industries Limited. Emulsion polymers of styrene and unsaturated amides. 3,580,877, Cl. 260-29.6

Cory Corporation: *See—*
Farrell, Claude S., Jr., 3,580,163.

Cosentino, Louis Ciro, to Hoffmann-La Roche Inc. Disposable electrode with self-sealing plug outlet. 3,580,240, Cl. 127-2.06

Cosier, James Edwin Henry, to Postmaster General, Her Majesty's. Apparatus for forming moulding components. 3,579,739, Cl. 18-30.

Costa, Robert B., to Rain Bird Sprinkler Mfg. Corporation. Bearing for impact motor driven sprinkler. 3,580,506, Cl. 239-230.

Coulter Electronics, Inc.: *See—*
Coulter, Wallace H., 3,580,686.
Coulter, Wallace H., to Coulter Electronics, Inc. Vessel having intersample anti-contamination construction. 3,580,686, Cl. 356-246.
Cox, John B.; and Stoltz, Jacque R., to Mobil Oil Corporation. Time averaging method and apparatus for obtaining fluid measurements. 3,580,072, Cl. 73-205.
Coy, John W., to Coy Oil Co., Inc. Economizer. 3,580,225, Cl. 122-20.
Coy Oil Co., Inc.: *See—*
Coy, John W., 3,580,225.
Cragstan Industries, Inc.: *See—*
Perhacs, Leslie, Jr., 3,579,901.
Craig, Leonard J., to United States of America, Air Force. Catadioptric reflex radiation detection conversion, location and display device. 3,581,089, Cl. 250-83.
Craig, Peter James: *See—*
Keen, Ian Montgomery; Craig, Peter James; and Bradshaw, Christopher Patrick Cadman,3,580,960.
Cramer, Donald L.; and Limpach, Paul D., to Automatic Feed Company. Strip stocking handling equipment. 3,580,021, Cl. 72-5.
Crane Co.: *See—*
Lien, Millard H., 3,579,661.
Craver, Edward H., to Western Electric Company, Incorporated. Apparatus for assembling pieceparts into cup- shaped adapters. 3,579,792, Cl. 29-208.
Creith, Lou C., to Olin Corporation. Semi-automatic weld apparatus with means for changing electrode angular disposition. 3,581,049, Cl. 219-125.
Crick, Stephen E.: *See—*
Hayes, Edward J.; and Crick, Stephen E.,3,579,783.
Crider, Walter Leslie, to United States of America, Health, Education and Welfare. Flame emission instrument for selectively monitoring metal aerosols. 3,580,680, Cl. 356-87.
Criner, Gaspard X.; and Blackburn, William A., to Monsanto Company. Method of producing fiber reinforced foam products. 3,580,763, Cl. 156-78.
Crisp, Clair R., Jr. Automatic car washer. 3,579,701, Cl. 15-21.
Crites, Nelson A.; and Lyons, Donald H., to Abbott Laboratories. Thermometer indicator. 3,580,079, Cl. 73-358.
Croix-Marie, Francis Marie Jean: *See—*
Bertin, Jean Henri; and Croix-Marie, Francis Marie Jean,3,580,181.
Crompton & Knowles Corporation: *See—*
Feeman, James F., 3,580,901.
Crook, Walter, Jr.: *See—*
Koll, Laurel A.; and Crook, Walter, Jr.,3,579,672.
Cross Electronics, Inc.: *See—*
Roman, Terrance S., 3,580,678.
Crossley, Neville Stanton: *See—*
Brown, Ivor James Stewart; Clarkson, Richard; Crossley, Neville Stanton; and McLoughlin, Bernard Joseph,3,580,905.
Crown Zellerbach Corporation: *See—*
Metz, Peter J., Jr., 3,579,735.
Crump, Elmo E. Synchronized burst generator. 3,581,213, Cl. 328-25.
CTS Corporation: *See—*
Rozema, Arthur L.; Brady, Lynn J.; and Barden, Wayne A., 3,579,819.
Culpepper, Alan L., to Dow Corning Corporation. Certain pyridinium haloether silanes and derivatives. 3,580,920, Cl. 260-297.
Cumpston, Edward H., Jr. Heat meter. 3,580,070, Cl. 73-193.
Cuneo, Robert A.: *See—*
Lamp, Richard W.; Kopf, Joseph E.; Dravis, Donald P.; and Cuneo, Robert A.,3,580,981.
Cunningham, James A.; and Clark, Robert S., to Texas Instruments, Incorporated. Molybdenum-gold-molybdenum interconnection system for integrated circuits. 3,581,161, Cl. 317-234.
Currey, John E.; Grotheer, Morris P.; and Cook, Edward H., Jr., to Hooker Chemical Corporation. Impregnated graphite. 3,580,824, Cl. 204-95.
Cutter-Hammer, Inc.: *See—*
Dennison, William G., 3,581,036.
Cvacho, Daniel S.; and Fritchey, Edward H., to Reynolds Metals Company. Apparatus for and method of forming a sheet-like workpiece. 3,580,200, Cl. 113-1.
Cynober, Simon, to Saunier Duval. Articulated cartridges for pneumatic conveyance. 3,580,527, Cl. 243-38.
Czuszak, Charles C., to Carrier Corporation. Vibration absorbing throttle lift bar. 3,580,691, Cl. 415-155.
Dach, Hansjorg, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Automatic gear-shift control for automotive transmission system. 3,580,112, Cl. 74-868.
Dahle, Hildegard, to U.S. Philips Corporation. Acid containing electrolytic liquid for an electrolytic capacitor. 3,580,845, Cl. 252-62.2
Dahms, Wolfgang: *See—*
Todt, Hans-Gunther; and Dahms, Wolfgang,3,580,821.
Daicel Ltd.: *See—*
Numa, Yoshiaki; Nakamachi, Akio; and Murakami, Yasukazu, 3,580,917.
Daigne, Bernard M.; and Pelletier, Louis, to Office National d'Etudes et de Recherches Aerospatiales (par abreviation O.N.E.R.A.). Device for the supervision of a treatment in an enclosure at very low pressure. 3,581,086, Cl. 250-49.5
Daimler-Benz Aktiengesellschaft: *See—*
Gmeiner, Gunter; and Grabner, Christian, 3,580,624.
Heim, Gerhard, 3,580,629.
Hoffmann, Heinrich; and Wagner, Wilhelm, 3,580,230.
Dal Monte, Giorgio; and Pitidis, Nicola, to Societa Italiana Telecomunicazioni Siemens S.p.A. Pulse-transmission system. 3,581,008, Cl. 178-63.
Dale Electronics, Inc.: *See—*
Cannon, Richard L.; and Smith, Leonard R. D., 3,581,254.
Cannon, Richard L.; and Smith, Leonard R. D., 3,581,255.
Person, Herman R., 3,581,264.
Dall'Asta, Leone:*See—*
Pedrazzoli, Andrea; and Dall'Asta, Leone,3,580,914.
Dalton, Robert Barry, to United Aircraft Corporation. Spherical bearing tester. 3,580,059, Cl. 73-71.5
Dame, Charles, Jr., to General Foods Corporation. Method of increasing solubility of food acidulents. 3,580,726, Cl. 99-78.
Damewood, Glenn; Sparks, Cecil R.; and King, James D., to Southern Gas Association, mesne. Electrical analog model for fluid flow transmission system. 3,581,077, Cl. 235-184.
D'Amico, Paul M. Devices and accessories for electric armored cables and stuffing tubes. 3,579,790, Cl. 29-203.
Damon Corporation: *See—*
Nejame, Samuel, Jr.; Kondel, George C.; and De Santis, Italo J., 3,580,301.
Daniel, David W.; and McNabb, Warren C., to Lear, Siegler, Inc. Gear rolling. 3,580,027, Cl. 72-98.
Daniel, David W.; Verschaeve, Henry O.; and Mc Nabb, Warren C., to Lear, Siegler, Inc. Rolling chamfers on gear teeth. 3,580,029, Cl. 72-108.
Darragh, Richard T.; and Succo, John A., to Procter & Gamble Company, The. Protein-supplemented peanut spread. 3,580,729, Cl. 99-128.
David Manufacturing Co.: *See—*
Murphy, David M., 3,580,549.
Davidson, Louis,. Composite mantle system. 3,580,192, Cl. 108-152.
Davidson Rubber Company, Inc.: *See—*
Rhodes, Richard D., Jr.; and Flanagan, Kirby E. L., 3,580,869.
Davies, Kenneth Knapton, to Metal Box Company Limited, The. Cartons. 3,580,465, Cl. 229-14.
Davies, Robert William; Hall, Charles Thomas; Hinchcliffe, Dennis; McCombie, Alan Keith; and Youngman, Derek Henry, to Molins Machines Company Limited. Packing machines. 3,579,952, Cl. 53-37.
Davis, Frank J.; and Edwards, George Zahnor, to Kedman Company. Eye-shield operating system for welding helmets. 3,579,638, Cl. 2-8.
Davis, Glenn V., to Borden, Inc. Method of and apparatus for obviating spillage in moving containers. 3,579,950, Cl. 53-37.
Davis, William J.: *See—*
Strafford, Richard A.; and Davis, William J.,3,580,572.
Davy and United Engineering Company, Limited: *See—*
Bond, Harry Laurence Fred; Stubbs, Dennis; and Maltby, Todwick, 3,580,035.
Dawson, John M.: *See—*
Johnson, John L.; Winsor, Niels K.; Dawson, John M.; Sinclair, Rolf M.; and Hosea, Joel C.,3,580,802.
Dayton Reliable Tool & Mfg. Company: *See—*
Eickenhorst, Franklin C., 3,580,264.
Dean, Albert G., to Budd Company, The. Railway spring suspension. 3,580,557, Cl. 267-3.
Dean, Michael R.; Castro, Luis F.; and Salerni, John V., to Baker Oil Tools, Inc. Apparatus for controlling fluid flow from gas storage wells and reservoirs. 3,580,332, Cl. 166-184.
De Belder, Anthony N.; and Lindberg, Bernt J., to Pharmacia AB. Keto dextran compounds. 3,580,903, Cl. 260-209.
Decker, Eugene J.: *See—*
Zueger, Karl J.; and Decker, Eugene J.,3,580,456.
De Claire, Alton G., Jr.: *See—*
Hestad, Erling; Ritter, Thomas E.; and De Claire, Alton G., Jr.,3,580,352.
De Franco, Thomas P.: *See—*
Garrett, Elgie E.; De Franco, Thomas P.; and Staples, Nicholas B.,3,581,135.
De Graff, Charles D.: *See—*
Allen, Howard L.; and De Graff, Charles D.,3,580,588.
Delair, Jean-Paul: *See—*
Voisin, Eugene; Raisin, Jean-Pierre; and Delair, Jean-Paul,3,580,012.
Delaware Valley Armaments, Inc.: *See—*
Cheney, Oliver F., 3,580,046.
Delong, William T., to McKay Company, The. Welding flux component. 3,580,748, Cl. 148-26.
Delort, Pierre A. Sanitary towel. 3,580,252, Cl. 128-290.
DeMan, Heiko T., to Electronic Dispensers International. Beverage dispenser. 3,580,425, Cl. 222-129.1
Demler, Walter R.; and Jachlewski, Arthur F., to Allied Chemical Corporation. Process for preparation of naphthyridine dione dyestuffs. 3,580,919, Cl. 260-295.
Denes, Peter A. Magnetic core memory array. 3,581,295, Cl. 340-174.
Dennison, William G., to Cutter-Hammer, Inc. Push-pull electric switch operator. 3,581,036, Cl. 200-172.
Densmore, William P., to Norton Company. Abrasive wheel. 3,579,925, Cl. 51-330.
De Pauw, Robert C. Toboggan. 3,580,598, Cl. 280-18.
De Penti, Kenneth L., to Midland-Ross Corporation. Rotary uncoupling devices. 3,580,400, Cl. 213-166.

Depenti, Kenneth L.: *See—*
Willison, Donald; and Depenti, Kenneth L.,3,580,399.

De Santis, Italo J.: *See—*
Nejame, Samuel, Jr.; Kondel, George C.; and De Santis, Italo J.,3,580,301.

De Shay, Robert V.: *See—*
Isaksen, Robert A.; and De Shay, Robert V.,3,580,972.

Dessauer, Hans J., to Beaunit Corporation. Cake wrapping device. 3,579,961, Cl. 53-390.

De Torre, John; and Wingard, Henry S., to Federal Pacific Electric Company. Molded case circuit breaker having an auxiliary contact separating spring. 3,581,261, Cl. 337-67.

Deussner, Herbert; and Langmaack, Jurgen, to Klockner-Humboldt-Deutz Aktiengesellschaft. Device for feeding pulverulent materials. 3,579,850, Cl. 34-57.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Fratzscher, Helmut; Klein, Kurt; Maluzi, Joachim; Hansen, Peter; and Schmitz, Werner, 3,580,844.
Heimberger, Werner; and Schmitt, Hermann, 3,580,912.
Klein, Kurt; Lumbeck, Gerd; and Maluzi, Joachim, 3,580,519.

De Varda, Giorgio: *See—*
Martinelli, Saverio; and De Varda, Giorgio,3,581,016.

de Villiers, Rocco Catoggio; Blachez, Loic; Jegou, Francois; Huyghe, Jean; and Vignet, Paul, to Commissariat a l'Energie Atomique. Sea water multistage distillation process with common reheating means. 3,580,818, Cl. 203-11.

De Voss, Edwin A.; and Guerreiro, Antone M. Tube bending mandrel. 3,580,044, Cl. 72-466.

De Vries, Adrian J.; and Wojcik, Thomas J., to Zenith Radio Corporation. Acoustic filters. 3,581,248, Cl. 333-72.

De Vries, Robert W., to Wolverine Brass Works. Single lever valve for automatic washers. 3,580,283, Cl. 137-625.18

Diamond Alkali Company: *See—*
Lasco, Ralph H., 3,580,854.

Diamondhead Properties, Inc.: *See—*
Koll, Laurel A.; and Crook, Walter, Jr., 3,579,672.

Di Bartolo, Ernest A.: *See—*
Stark, Donald A.; Di Bartolo, Ernest A.; Feather, Harry A.; and Sundin, Charles H.,3,579,989.

DiBlasi, Rosario. Wheel collapsible frame. 3,580,348, Cl. 180-25.

Dick, Werner: *See—*
Hammann, Heinz; and Dick, Werner,3,580,551.

Dickson, Leon L., Jr.: *See—*
Broussard, Leo P.; Dickson, Leon L., Jr.; and Gardenier, Wilhelmus J. G.,3,580,334.

Diebold Incorporated: *See—*
Hammond, Robert A.; and Presta, Eugene A., 3,580,998.
Sandorf, Robert E.; and Hammond, Robert A., 3,580,993.

Diebold, James L.: *See—*
Wolf, Milton; and Diebold, James L.,3,580,915.

Diehl: *See—*
Meisner, Alfred; and Spitzl, Walter, 3,581,128.

Diehl, Charles G., to Save Fuel Corporation. Automatic damper means. 3,580,238, Cl. 126-295.

Diehr, Hans Joachim; Merten, Rudolf; Piechota, Helmut; and Uhlig, Konrad, to Farbenfabriken Bayer Aktiengesellschaft. Polyisocyanurate resin and foam formation catalyzed by Mannich bases. 3,580,868, Cl. 260-2.5

Diehr, Hans Joachim: *See—*
Ware, Gordon K.; Diehr, Hans Joachim; Merten, Rudolf; Piechota, Helmut; and Uhlig, Konrad,3,580,890.

Dieterich, Frank L. Method and blank for making potentiometer contact springs. 3,579,822, Cl. 29-630.

Dietz, Johannes. Silent butler. 3,580,396, Cl. 211-88.

Dilday, Joseph T., to Olin Corporation. Coated fertilizer. 3,580,715, Cl. 71-28.

Dill, Frederick H., Jr., to International Business Machines Corporation. Method for fabricating a semi-conductor device having an epitaxially grown region. 3,579,814, Cl. 29-578.

Dill, Onnie R. Vibratory massaging device. 3,580,245, Cl. 128-33.

Di Luco, Eugene W. Demountable wig stand. 3,580,436, Cl. 223-66.

Dinorwic Slate Quarries Company Limited: *See—*
Lombos, Lazlo; and Hughes, Michael Robert, 3,580,235.

Di Paolo, Peter T., Jr.; and Carbine, Joseph C., to Burroughs Corporation. Unitary bi-stable code wheel for mechanical conveyors and sorting apparatus. 3,579,778, Cl. 29-110.

Dixon, Lloyd H., Jr., to Unitrode Corporation. Thyristor circuit having improved turn-off characteristics. 3,581,117, Cl. 307-252.

Djenner, Richard, to Olaf Bendik Elmer. Hair curler having a high heat storage core telescopically mounted therein. 3,581,056, Cl. 219-222.

Dmitrenko, Viktor Makarovich: *See—*
Bushuev, Vladimir Pavlovich; Gubin, Georgy Viktorovich; Zolotarev, Petr Semenovich; Sorokin, Vladimir Andreevich; Palamarchuk, Vladimir Ivanovich; and Dmitrenko, Viktor Makarovich,3,580,554.

D'Muha, Thomas F. Electronic timepiece. 3,579,976, Cl. 58-50.

Doane, James E.; and Sheriff, Robert C. Banding apparatus for stacked articles. 3,580,786, Cl. 156-475.

Dobell, Curzon; and Wilson, Leslie P., to Caribbean Holdings Ltd., mesne. Method and apparatus for making elongated vessels, containers and tubular members. 3,580,461, Cl. 228-15.

Dodds, Wellesley Jamison, to RCA Corporation. Display device for providing graticules of various configurations. 3,581,002, Cl. 178-7.84

Dodgen Industries, Inc.: *See—*
Dodgen, John N.; and Johnson, Kenneth R., 3,580,599.

Dodgen, John N.; and Johnson, Kenneth R., to Dodgen Industries, Inc. Jack and tie-down system for a vehicle mounted camper. 3,580,599, Cl. 280-34.

Doherty, Martin C., to General Electric Company. Fluidic speed governor. 3,580,086, Cl. 73-506.

Dolan, Jose P., to Institute of Gas Technology, The. Cooling apparatus and process for heat-actuated compressors. 3,580,003, Cl. 62-115.

Dolbachian, Raymond; and Lefevre, Claude, to U.S. Philips Corporation. Electronic arrangement for controlling an electromagnetic clutch. 3,581,156, Cl. 317-123.

Dominion Auto Accessories Limited: *See—*
Magi, Hugo, 3,581,080.

Dominion Luggage Co., Limited: *See—*
Slan, Jack, 3,579,804.

Domke, Klaus: *See—*
Buchner, Norbert; and Domke, Klaus,3,579,945.

Donadio, Vincent J.; and Anderson, Olavi F., to United States of America, Army. Manufacturing apparatus. 3,580,031, Cl. 72-186.

Dopner, Horst, to Telefunken Patentverwertungsgesellschaft m.b.H. Arrangement maintaining constant tape tension in magnetic tape recorders. 3,580,525, Cl. 242-189.

Dorner, Armin, to Linde Aktiengesellschaft. Process and apparatus for process control in cracking furnaces for the thermal cracking of hydrocarbons. 3,580,959, Cl. 260-683.

Dornfeld, John E., to Sprague Electric Company. Non-tracking wire spark gap component. 3,581,143, Cl. 313-325.

Dorr-Oliver Incorporated: *See—*
Logan, Robert P.; and Albertson, Orris E., 3,580,193.

Dostourian, Harry: *See—*
Beguin, Fred P.; and Dostourian, Harry,3,579,640.

Douglas, Bobby L., to Dresser Industries Inc. Well liquid removal device. 3,580,333, Cl. 166-224.

Dow Badische Company: *See—*
Nishimura, Akihiro, 3,580,874.

Dow Chemical Company, The: *See—*
Mandrell, Melford E.; and Blaser, Wayne W., 3,580,067.
Martin, Fred D., 3,581,204.
Mintz, Michael J., 3,580,831.
Morris, Leo R., 3,580,948.
Mussell, Dorsey R.; and Schwartzbeck, Richard A., 3,580,716.
Spence, Thomas C., 3,580,801.
Trepanier, Donald L., 3,580,943.
West, Walter H., 3,579,733.

Dow Corning Corporation: *See—*
Culpepper, Alan L., 3,580,920.

Dragos, Ion: *See—*
Iliescu, Liviu; and Dragos, Ion,3,580,682.

Drake, Lewis A.: *See—*
Waltz, Marion D.; and Drake, Lewis A.,3,580,022.

Dravis, Donald P.: *See—*
Lamp, Richard W.; Kopf, Joseph E.; Dravis, Donald P.; and Cuneo, Robert A.,3,580,981.

Dresser Industries Inc.: *See—*
Douglas, Bobby L., 3,580,333.

Dreyer, Heinz: *See—*
Perthen, Johannes; Gerighausen, Werner; Kunzmann, Konrad; and Dreyer, Heinz,3,580,062.

Driscoll, Gary L., to Sun Oil Company. Curable linear polyesters. 3,580,964, Cl. 260-871.

Dubost, Pierre J.; and Perret, Henri. Apparatus for the systematic correction and selective appreciation of teaching tests. 3,579,875, Cl. 35-48.

Duchek, Ernest J., to Powers Regulator Company. Thermostatic pressure transmitter. 3,580,502, Cl. 236-102.

Duennenberger, Max: *See—*
Anliker, Rudolf; Duennenberger, Max; Schmid, Karl; and Siegrist, Adolf Emil,3,580,924.

Duerink, Steven; and Steinvoort, Leendert. Package for solid pieces of foodstuffs or the like and method for manufacturing such packages. 3,580,463, Cl. 229-2.5

Duffy, Richard J., to USM Corporation. Methods of making self-locking threaded elements. 3,579,684, Cl. 10-10.

Dumas, Pierre: *See—*
Schuette, Thomas L.; Straub, Melvin J.; Dumas, Pierre; and Aurich, Peter F.,3,579,771.

Duncan, William R. Automatic pilot. 3,580,206, Cl. 114-144.

Dunn, Jane M. Apparatus for holding pets. 3,580,222, Cl. 119-102.

Dunn, William H., Jr., to Grace, W. R., & Co. Vacuum apparatus and snorkel nozzel. 3,580,300, Cl. 141-65.

Dunwoodie, Duane E., to Wilton Company. Linear voltage controlled attenuator. 3,581,222, Cl. 330-29.

Du Pont de Nemours, E. I., and Company: *See—*
Barney, Arthur Livingston; and Honsberg, Wolfgang, 3,580,889.
Barnhard, Philip, IV, 3,580,754.
Bianca, Dominick, 3,580,873.
Hick, Robert M., Jr.; and Gould, Joseph C., 3,580,796.
Hyde, Thomas J.; and Targonski, Leonard A., 3,580,577.
Lang, Frederic A., 3,579,931.
Manos, Philp, 3,580,925.

Dupre, Jean, to Rohm and Haas Company. Stabilized nonionic surfactants in solid formulations containing active chlorine compounds. 3,580,850, Cl. 252-99.

Du Priest, Florence. Stadium foot bag and seat. 3,580,633, Cl. 297-184.
Dura Corporation: *See—*
Mc Gee, Donald J., 3,580,347.
Duthoit, Jean: *See—*
Plumat, Emile; and Duthoit, Jean,3,579,720.
Dyal, Gilford E., to Tripro, Inc. Method for producing laminated structures. 3,580,770, Cl. 156-216.
Dyer, Arthur M. Toilet tank and guide for flush control valve. 3,579,649, Cl. 4-56.
Dynamics Corporation of America: *See—*
Valbona, Bruno M., 3,581,028.
Dynamit Nobel Aktiengesellschaft: *See—*
Gawlick, Heinz; Stahlmann, Rudolf; and Umbach, Hans, 3,580,179.
Gawlick, Heinz; and Marondel, Gunther, 3,580,180.
Eastburn, Francis J.: *See—*
Gulstad, Clayton O.; and Eastburn, Francis J.,3,580,728.
Eastman Kodak Company: *See—*
Beeler, Robert S., 3,580,669.
Casebeer, Oran T., 3,580,157.
Chuhta, Thomas A., 3,580,452.
Claar, Hermann, 3,580,668.
Ettischer, Helmut, 3,580,154.
Harvey, Donald M., 3,580,148.
Mee, John D.; and Heseltine, Donald W., 3,580,911.
Moore, Robert B., Jr., 3,580,445.
Romano, Paul, 3,581,058.
Eaton, Calley Neil: *See—*
Bernasek, Edward; and Eaton, Calley Neil,3,580,906.
Eaton Yale & Towne, Inc.: *See—*
Bauerlein, Carl C., 3,580,007.
Beatty, Robert D., Jr.; and Griffiths, Thomas C., 3,581,277.
Chute, Richard; and Berryman, Charles O., 3,580,603.
Nearman, Richard E., 3,580,382.
Ebauches S.A.: *See—*
Besson, Rene; and Chopard, Remy, 3,579,975.
Ebeling, William C., to Singer-General Precision, Inc. Visual display method and appartus. 3,580,978, Cl. 35-10.2
Ebert, Michael: *See—*
Altman, Norman G., 3,581,282.
Eckert, Georg: *See—*
Ciriack, Gunter; Eckert, Georg; and Hofmann, Horst,3,580,739.
Eckert, John Presper, Jr.: *See—*
Fedde, George A.; and Eckert, John Presper, Jr.,3,581,293.
Eddington, Lloyd H. Record book. 3,579,871, Cl. 35-66.
Edson, Jerry W. Portable boat ramp. 3,579,996, Cl. 61-66.
Edwards, Albert, to British Cast Iron Research Association. Apparatus for making foundry cores and moulds. 3,580,326, Cl. 164-200.
Edwards, George Zahnor: *See—*
Davis, Frank J.; and Edwards, George Zahnor,3,579,638.
Edwards, John C., Sr. Gizzard processing device. 3,579,714, Cl. 17-11.
Eggstein, Giorgio; and Ungerer, Heinz, to Heinkel, Ernst Aktiengesellschaft. Disk brake construction. 3,580,361, Cl. 188-72.4
Eguchi, Yasuhito; Fujiwara, Yoshio; and Tohma, Takaaki, to Sony Corporation. Multi-head magnetic recording and reproducing device for video signals featuring head switching in the record mode. 3,580,992, Cl. 178-6.6
Ehngelsmann, Dieter; Schroder, Rolf; and Becker, Erwin, to Agfa-Gevaert Aktiengesellschaft. Photographic apparatus. 3,580,152, Cl. 95-31.
Ehrenberg, Hermann, to Fouquet-Werk Frauz & Planck. Pipe union. 3,580,617, Cl. 285-340.
Ehrens, Henry; and Weiner, Sidney. Sealed Unit Parts Co., Inc. Debrisless tap valve with backraked piercing element. 3,580,269, Cl. 137-318.
Ehrhorn, Richard W.: *See—*
Maitland, Peter; and Ehrhorn, Richard W.,3,581,211.
Ehrlich, Stanley V., to Western Manufacturing, Inc. Apparatus for chipping scrap materials. 3,580,517, Cl. 241-186.
Eichenlaub, John E. Apparatus for welding heat sealable sheet material. 3,580,795, Cl. 156-583.
Eichert, Edwin S.; and Storey, William T., II, to Technitrol, Inc. Delay line having non planar ground plane, each loop bracketing two runs of meandering signal line. 3,581,250, Cl. 333-31.
Eichman, Ellis V. Frame structure for glass or solid panel walls. 3,579,939, Cl. 52-397.
Eickenhorst, Franklin C., to Dayton Reliable Tool & Mfg. Company. Fluidic device. 3,580,264, Cl. 137-81.5
EIS Automotive Corporation, The: *See—*
Schwarz, Ernest I., 3,580,273.
Eisberg, Keith V., to Carrier Corporation. Absorption refrigeration machine with concentration control tank. 3,580,001, Cl. 62-101.
Eisenberg, Edith Brown. Tables having positions of use and non-use. 3,580,189, Cl. 108-3.
Eisenmenger, Irving V., to Western Electric Company, Incorporated. Single output selecting circuit employing a plurality of interlocked nor-gates. 3,581,108, Cl. 307-215.
Electric Conductor Bearings, Incorporated: *See—*
Schreffler, Robert Z., 3,581,267.
Electro-Lifts Limited: *See—*
Warnett, Kenneth, 3,581,127.
Electronic Dispensers International: *See—*
DeMan, Heiko T., 3,580,425.
Electronic Transmission Systems, Inc.: *See—*
Priessnetz, Edmund F., 3,581,257.
Elitex, Zavody textilniho strojirenstvi: *See—*
Rambousek, Zdenek, 3,580,292.
Ellert, Georgy Vladimirovich: *See—*
Buzhinsky, Igor Mikhailovich; Zhabotinsky, Mark Efremovich; Rudnitsky, Jury Petrovich; Tsapkin, Vadim Vasilievich; Tsapkina, Irma Vyacheslavovna; and Ellert, Georgy Vladimirovich,3,580,859.
Elliot Laboratories, Inc.: *See—*
Ericson, Richard E., 3,579,652.
Elliot, Michael. Article holder. 3,580,394, Cl. 211-60.
Elmy, Richard A., to Westinghouse Electric Corporation. Pop-out lint trap and door interlock for laundry apparatus. 3,579,851, Cl. 34-82.
Eloranta, Walter G. Electronic actuator and timer circuit. 3,581,300, Cl. 340-309.1
Emhart Corporation: *See—*
Mc Intyre, Daniel, 3,580,143.
Emslie, Norman M.: *See—*
Bar-On, Ari; and Emslie, Norman M.,3,580,064.
Enderby, Ralph T., to Motorola, Inc. Frequency modulated solid state crystal oscillator providing a plurality of center frequencies. 3,581,240, Cl. 332-26.
Endle, Joseph, to Polymer Corporation, The. Method of electrolytic tinning sheet steel. 3,580,289, Cl. 204-34.
Engel, Jean-Pierre: *See—*
Wichoud, Michel; and Engel, Jean-Pierre,3,580,526.
Engelhard, Helmut; Bentz, Francis; Rinkler, Heinrich; and Nischk, Gunther, to Farbenfabriken Bayer Aktiengesellschaft. Graft copolymers of acrylonitrile onto a linear polyether having quaternised nitrogen atoms. 3,580,966, Cl. 260-898.
Engelhardt, Robert C.: *See—*
Neema, Farid J.; and Engelhardt, Robert C.,3,581,285.
Engels, Edward P. X-ray table attachment. 3,581,088, Cl. 250-55.
Engineered Products Company, The: *See—*
Pietsch, Raymond L., 3,579,934.
Engis Equipment Company: *See—*
Panko, Walter B.; and Steindler, Julius P., 3,579,912.
English Electric Valve Company Limited: *See—*
Banks, Peter Baldwin, 3,580,709.
Enkvist, Ernst: *See—*
Burmeister, Fred; Enkvist, Ernst; Johansson, Bengt; and Kostilainen, Valter,3,580,204.
Entwistle Company, The: *See—*
Cooper, Beresford B., 3,579,731.
Eppich, Robert E.; and Webbere, Fred J., to General Motors Corporation. Mold for improved control of heat transfer in casting plate or strip products. 3,580,328, Cl. 164-283.
E. P. S. (Research & Development) Limited: *See—*
Hawley, Edwin L., 3,579,747.
Ericson, Richard E., to Elliot Laboratories, Inc. Sanitary urine collector. 3,579,652, Cl. 4-110.
Erie Technological Products, Inc.: *See—*
Veater, Donald J.; Hill, Sumner B.; and Ruffner, Lawrence J., 3,581,167.
Eriksson, Birger Sture Erik, to Aktiebolaget Jonkoping-Vulcan. System for distributing and advancing objects. 3,580,640, Cl. 302-2.
Eriksson, Gustave Ragnar, to Saab Aktiebolag. Means for exposing normally covered plate while moving it to exposure situation. 3,580,685, Cl. 356-244.
Eriksson, Lars O., to General Electric Company. High-current semiconductor rectifier assemblies. 3,581,163, Cl. 317-234.
Erman, William F.: *See—*
Fanta, Wayne I.; and Erman, William F.,3,580,953.
Fanta, Wayne I.; and Erman, William F.,3,580,954.
ESB Incorporated: *See—*
Hills, Stanley, 3,580,825.
James, Herbert I., 3,580,740.
Esenwein, Fred T.: *See—*
Cardwell, Lonnie D.; Esenwein, Fred T.; and Pierard, Arthur E.,3,580,049.
Eshuis, Jannes; and Tjebbes, Horatius, to Algemene Kunstzijde Unie N.V. Method of opening crimped yarn. 3,579,765, Cl. 28-72.16
Eskimo Pie Corporation: *See—*
Leonard, Edwin Clifton, 3,580,470.
Esmond, William G. Artificial heart. 3,579,644, Cl. 3-1.
Essex International, Inc.: *See—*
Newman, La Verne R., 3,581,276.
Esso Research and Engineering Company: *See—*
Kroll, Wolfram R., 3,580,938.
Pfrehm, Raymond H., 3,580,045.
Spenadel, Lawrence, 3,580,867.
Etablissements MACHET: *See—*
Machet, Adrien, 3,580,173.
Etablissements Valois: *See—*
Angele, Henry, 3,580,430.
Etat Francais representa par le Ministre des Armees, Delegation Ministerielle pour l'Armement:*See—*
Robert, Andre; Bourdon, Claude; and Le Goer, Jean Luc, 3,580,681.
Ethyl Corporation: *See—*
Beaubier, Richard C., 3,581,141.
Perilstein, Warren L., 3,580,707.
Yang, Meiling T., 3,580,852.

Ettischer, Helmut, to Eastman Kodak Company. Operating mechanism for mirrortreflex camera. 3,580,154, Cl. 95-42.

Evans, Francis E.: *See—*
Cheng, Chao-Shing; and Evans, Francis E.,3,580,857.

Evans, Francis E.; and Cheng, Chao-Shing, to Allied Chemical Corporation. Stable liquid anhydride compositions. 3,580,858, Cl. 252-182.

Evans, Ivor: *See—*
Clarke, Terence J.L.; and Evans, Ivor,3,580,774.

Evans, Josie V.: *See—*
Clarke, Terence J.L.; and Evans, Ivor,3,580,774.

Evans, Raymond Victor, to Singer-Cobble Limited. Yarn guide. 3,580,454, Cl. 226-198.

Eveleth Taconite Company: *See—*
Urich, Daniel M., 3,580,553.

Everett, Samuel R.: *See—*
Shear, Wayne G.; Everett, Samuel R.; and Olmstead, Merlin E.,3,581,309.

Everson, Ivor; and George, Maurice William, to United Kingdom Atomic Energy Authority. Nuclear reactors. 3,580,803, Cl. 176-28.

EVG Entwicklungs und Verwertungs- Gesellschaft m.b.H.: *See—*
Gott, Hans; and Ritter, Josef, 3,580,018.

Ex-Cell-O Corporation: *See—*
Leone, William C.; and Malone, Robert Lee, 3,581,003.

Excelermatic, Inc.: *See—*
Kraus, Charles E., 3,580,094.

Expando Products Company: *See—*
Triplett, Lee, 3,580,397.

Explosives Corporation of America: *See—*
Maes, Michael E., 3,580,171.

Extel Corporation: *See—*
Fulton, John, 3,581,005.

Fairbanks, John P.: *See—*
Trindle, John P., 3,580,429.

Fairbanks, Theodore H., to FMC Corporation. Apparatus for extruding net-like structures. 3,579,729, Cl. 18-12.

Falco, Eugenio. Improvement in miniaturized potentiometers. 3,581,265, Cl. 338-174.

Falk, Edward J., to Wagner Electric Corporation. Disc brake. 3,580,362, Cl. 188-73.4

Fanta, Wayne I.; and Erman, William F., to Procter & Gamble Company, The. Preparation of 3-endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl) norcamphor from 2-methyl-4-pentenol. 3,580,953, Cl. 260-586.

Fanta, Wayne I.; and Erman, William F., to Procter & Gamble Company, The. Preparation of 3-endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl)norcamphor from 2-methyl-4 pentenol. 3,580,954, Cl. 260-586.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
Arlt, Dieter, 3,580,942.
Diehr, Hans Joachim; Merten, Rudolf; Piechota, Helmut; and Uhlig, Konrad, 3,580,868.
Engelhard, Helmut; Bentz, Francis; Rinkler, Heinrich; and Nischk, Gunther, 3,580,966.
Gunther, Peter; Oberkirch, Wolfgang; and Pampus, Gottfried, 3,580,892.
Schmidt, Wolfgang; Kraft, Karl-Josef; and Kurth, Willi, 3,579,722.
Ware, Gordon K.; Diehr, Hans Joachim; Merten, Rudolf; Piechota, Helmut; and Uhlig, Konrad, 3,580,890.

Farber, Elliott, to Tenneco Chemicals, Inc. Aqueous suspension polymerization of vinyl halide polymers in the presence of acrylic acid. 3,580,896, Cl. 260-87.1

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Brinkmann, Ludwig; Cherdron, Harald; and Herwig, Walter, 3,580,965.
Geymayer, Peter; Billenstein, Siegfried; and Renz, Werner, 3,580,849.
Kurzke, Herbert; Goltner, Wolfgang; and Seifried, Walter, 3,580,963.
Moschel, Albrecht, 3,580,952.
Mundlos, Eberhard; Mohr, Reinhard; Trapp, Gunther; and Hohmann, Kurt, 3,580,900.
Rauterkus, Karl Josef; and Vollmann, Hansjorg, 3,580,871.
Wenzel, Gunter, 3,580,789.

Farmhand, Inc.: *See—*
Moore, Carroll E., 3,580,548.

Farrand Optical Co., Inc.: *See—*
La Russa, Joseph, 3,580,660.

Farrell, Claude S., Jr., to Cory Corporation. Variable capacity coffee percolator. 3,580,163, Cl. 99-310.

Farrer, Sydney, to Bryan Donkin Company Limited, The. Gas pressure regulators. 3,580,271, Cl. 137-458.

Fauber, Eugene M.: *See—*
Moyer, Hallard C.; and Fauber, Eugene M.,3,580,736.

Faukner, Kenneth F.: *See—*
Moore, Robert D., 3,580,667.

Faulkner, James M. Suspending device for garments. 3,579,639, Cl. 2-117.

Favreau, Ernest: *See—*
Fraser, Colin Kenneth Glenn; Favreau, Ernest; and March, Willis Paul,3,580,546.

Feather, Harry A.: *See—*
Stark, Donald A.; Di Bartolo, Ernest A.; Feather, Harry A.; and Sundin, Charles H.,3,579,989.

Fedde, George A.; and Eckert, John Presper, Jr., to Sperry Rand Corporation. Form of plated wire memory device. 3,581,293, Cl. 340-174.

Federal Auto Products Co., Inc.: *See—*
Philipps, Virgil, 3,580,424.

Federal Pacific Electric Company: *See—*
De Torre, John; and Wingard, Henry S., 3,581,261.

Federal-Mogul Corporation: *See—*
Nueman, William H.; and Repella, James A., 3,580,061.

Feeman, James F., to Crompton & Knowles Corporation. Maroon disazo dyes for polyamide fibers. 3,580,901, Cl. 260-191.

Feinberg, Emanuel M. Process for manufacturing press-free, resinated, double-face, interlock knit fabric. 3,579,766, Cl. 28-74.

Fenner, Robert M.; and Hamilton, Donald E. Foldable trampoline. 3,580,570, Cl. 272-65.

Ferag, Fehr & Reist AG: *See—*
Reist, Walter, 3,580,562.

Fergason, James L.: *See—*
Goldberg, Newton N.; and Fergason, James L.,3,580,864.

Ferkovich, Edward F. Thread conditioning and restoring tool. 3,579,689, Cl. 10-140.

Fernseh GmbH: *See—*
Krause, Gerhard, 3,580,991.

Fetter, Paul E. Utility hump seat and double tray. 3,580,630, Cl. 297-125.

Fetzer, Gustav; and Freytag, Gerhard, to Zinser-Textilmaschinen Gesellschaft mit beschrankter Haftung. Stop mechanism for a rotary textile spindle. 3,579,973, Cl. 57-88.

Fichtel & Saahs AG: *See—*
May, Michael, 3,580,229.

Fichtner, Rudi; Ober, Horgern; and Klein, Wilhelm, to USM Corporation. Shoe lasting machines. 3,579,691, Cl. 12-12.4

Field, Joseph H.: *See—*
Myers, John G.; and Field, Joseph H.,3,580,702.

Fields, Joseph E.: *See—*
Nielsen, Lawrence E.; and Fields, Joseph E.,3,580,882.

Fike, Elmer A., to Security Chemicals, Inc. Antiozonants. 3,580,885, Cl. 260-45.8

Filipowicz, Leon: *See—*
Clarke, Michael Raymond; and Filipowicz, Leon,3,580,880.

Fillion, Walter A. Puller device for generally cylindrical stem assemblies or valves. 3,579,796, Cl. 29-263.

Filper Corporation: *See—*
Kilner, George E., 3,580,381.

Finn Industries, Inc., The: *See—*
Bates, Tex, 3,579,954.

Firestone Tire & Rubber Company, The: *See—*
Hollis, Jack Lyndon; and Shockey, Ray Douglas, 3,580,781.

Firth, Donald; Hancock, Roger Harvey Yorke; and McCallum, James, to National Research Development Corporation. Hydrostatic transmission control system. 3,579,988, Cl. 60-53.

Fisher Governor Company: *See—*
Schuder, Charles B.; Skov, Victor E.; and Lytle, Richard F., 3,580,288.

Fisher, James J.: *See—*
Noonan, Michael F.; and Fisher, James J.,3,580,573.

Fisher, John T., to Carrier Corporation. Freeze limiting absorption refrigeration machine. 3,580,002, Cl. 62-101.

Fisher, Sidney L., to Spider Staging, Inc. Universal joint. 3,580,010, Cl. 64-9.

Fizichesky Institute IM. P. N. Lebedeva: *See—*
Korablev, Lev Nikolaevich, 3,581,147.

Fjallbrant, Tore Torstensson, to Telefonaktiebolaget L M Ericsson. Filter arrangement. 3,581,246, Cl. 333-24.1

Flanagan, Kirby E. L.: *See—*
Rhodes, Richard D., Jr.; and Flanagan, Kirby E. L.,3,580,869.

Fleco Corporation: *See—*
Frankenberg, Edward V.; and Griffith, Norman N., 3,580,310.

Flo-Tronics, Inc.: *See—*
Schmit, Wilfred W., 3,581,299.

Flores, Richard A.; and Sherman, Michael. Solid state touch responsive switch circuit. 3,581,124, Cl. 307-308.

Flottoro, Thomas. Spring operated fishing rod device. 3,579,896, Cl. 43-19.

Flower, William. Analog meter having means to provide a digital reading of the pointer position. 3,581,203, Cl. 324-96.

Floyd, Johnnie E. Stair negotiating wheel chair or an irregular terrain negotiating vehicle. 3,580,344, Cl. 180-8.

Fluid Controls, Inc.: *See—*
Stark, Donald A.; Di Bartolo, Ernest A.; Feather, Harry A.; and Sundin, Charles H., 3,579,989.

Flynn, John F. Vented leaching channel. 3,579,995, Cl. 61-13.

FMC Corporation: *See—*
Fairbanks, Theodore H., 3,579,729.
Richter, Herbert; Stock, David K.; Wech, Robert J.; Stock, David K.; and Wech, Robert J., 3,580,141.
Stewart, Mary J.; and Price, John A., 3,580,886.
Stock, David K.; and Wech, Robert J., 3,580,142.

Folan, Martin P.: *See—*
Vogel, Alvin R.; Moore, Douglas A.; Folan, Martin P.; and Buck, John R.,3,581,014.

Foldenauer, Ralph M., to Bloomer-Fiske, Inc. Meat mold. 3,580,165, Cl. 99-351.

Folding Cartons, Inc.: *See—*
Cannon, Lester E.; Tindall, John M.; and Taylor, Howard N., 3,580,476.

Forbro Design Corporation: *See—*
Nercessian, Sarkis, 3,581,224.

Ford Motor Company: *See—*
Mitchell, James W., Jr., 3,581,047.
Wargo, William, 3,580,331.

Fordyce, David B.: *See—*
Mickus, James C.; Fordyce, David B.; and Mansfield, Richard C.,3,580,855.

Foreman, Dave O. Motor operated vibrator having solar type motion. 3,580,246, Cl. 128-36.

Forkner, John F. Light display instrument. 3,580,126, Cl. 84-464.

Fort Wayne Metals, Inc.: *See—*
Glaze, Ardelle, 3,580,783.

Fortson, Warren D. Control and mounting system for electric trolling motor. 3,580,212, Cl. 115-18.

Fosindus Company: *See—*
Pavonet, Engelhard, 3,580,703.

Foundry Suppliers Inc.: *See—*
Klempner, George R.; and Rosenberg, Sam, 3,579,784.

Fouquet-Werk Frauz & Planck: *See—*
Ehrenberg, Hermann, 3,580,617.

Fowler, Timothy J., to Monsanto Company. Pallet construction. 3,580,190, Cl. 108-58.

Fox, Edward L., Jr., to Canadian Cedar Inc. Process for treating wood. 3,580,311, Cl. 144-309.

Fr. Hesser Maschinenfabrik Aktiengesellschaft: *See—*
Buchner, Norbert; and Domke, Klaus, 3,579,945.

Fraitzl, Raimund, to Bruckner-Maschinenbau Gernot Bruckner. Clamp block chain for holding one edge of a web of material. 3,580,451, Cl. 226-173.

Francis, Peter S.: *See—*
Cadotte, John E.; and Francis, Peter S.,3,580,841.

Frank, Emil A., 50% to Frank, Ronald L. Pipe connector. 3,579,670, Cl. 4-252.

Frank, Ronald L.: *See—*
Frank, Emil A., 3,579,670.

Franke, Georg G. F., to Leitz, Ernest, G.m.b.H. Toric imaging lens for slot censors for satellites. 3,581,099, Cl. 250-216.

Frankenberg, Edward V.; and Griffith, Norman N., to Fleco Corporation. Tree shear device with blade. 3,580,310, Cl. 144-34.

Franklin, Edmond G.: *See—*
Arndt, John P.; and Franklin, Edmond G.,3,581,125.

Fransen, Theodorus, to N.V. Machinefabriek L. Te Strake. Weaving machine. 3,580,293, Cl. 139-303.

Frantz Manufacturing Company: *See—*
Wolf, Cecil R.; and Holland, John P., 3,579,809.

Fraser, Colin Kenneth Glenn; Favreau, Ernest; and March, Willis Paul, to Kaydon Technical Enterprises Ltd. Device for mixing and proportioning liquids. 3,580,546, Cl. 259-4.

Fraser, Douglas S.: *See—*
Bender, Charles E.; and Fraser, Douglas S.,3,580,812.

Fratzscher, Helmut; Klein, Kurt; Maluzi, Joachim; Hansen, Peter; and Schmitz, Werner, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Method of processing oil emulsions used in metal machining. 3,580,844, Cl. 210-40.

Freeman, Alfred. Heat setting of footwear. 3,579,849, Cl. 34-48.

Freermann, Hans, to Schmale, Carl, Firma. Apparatus for folding, feeding and pressing pieces of fabric material. 3,579,876, Cl. 38-2.

Freiberg, Robert J., to United States of America, Air Force. Ultra-stable laser cavity mirror support assembly. 3,581,231, Cl. 331-94.5

French, Richard P., to Continental Can Company, Inc. Lock for egg carton cover. 3,580,480, Cl. 229-45.

French State, represented by the Minister of Armed Forces Ministerial Delegation of Weapons, Technical Delegation of Land Weapons Manufacturing Workshops of Tarbes: *See—*
Huberdeau, Gerard, 3,579,806.

Frey, Dean R.; Hone, George L.; and Ramsey, Edward L., Jr., to Bell Telephone Laboratories, Incorporated. Connector for coaxial cable. 3,581,269, Cl. 339-94.

Freytag, Gerhard: *See—*
Fetzer, Gustav; and Freytag, Gerhard,3,579,973.

Frieling, Gerald H., Jr., to Texas Instruments, Incorporated. Metal strand having a chromium steel core and corrosion-resistant cladding. 3,580,706, Cl. 29-196.3

Fritchey, Edward H.: *See—*
Cvacho, Daniel S.; and Fritchey, Edward H.,3,580,200.

Fritzsche, Harold L., to General Electric Company. Apparatus for compressing laminated cores. 3,579,788, Cl. 29-205.

Frowds Limited: *See—*
Buckley, Trevor, 3,581,310.

Fry, William H.; and Zerba, Lawrence G., to Construction Machinery Company. Auxiliary chute hold-down means for a truck mounted concrete mixer. 3,580,440, Cl. 224-42.31

Fudger, Shirley L. W.: *See—*
Boot, Herbert W.; Parr, Leslie R.; and Fudger, Shirley L. W.,3,579,695.

Fuerst, Ernst; and Weitz, Hans-Martin, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Recovery of aromatic hydrocarbons from mixtures of hydrocarbons by selective extraction with a substituted piperazine solvent. 3,580,839, Cl. 208-326.

Fuji Denki Kogyo Co., Ltd.: *See—*
Moriya, Nobuharu, 3,579,719.

Fuji Motors Corporation: *See—*
Itoh, Yoshishige; Kawamura, Masatada; and Kasai, Yoshio, 3,580,637.

Fuji Shashin Film Kabushiki Kaisha: *See—*
Fujisawa, Shin, 3,580,149.

Fujio, Ryota: *See—*
Onishi, Akira; Anzai, Shiro; Irako, Koichi; Fujio, Ryota; Hayakawa, Yoshihiro; and Miyamoto, Shoji,3,580,895.

Fujisawa, Shin, to Fuji Shashin Film Kabushiki Kaisha. Filter correction device. 3,580,149, Cl. 95-11.

Fujita, Kozo: *See—*
Kitano, Yasushi; and Fujita, Kozo,3,580,355.

Fujitsu Limied: *See—*
Kobayashi, Toshio, 3,581,010.

Fujiwara, Mitsuto: *See—*
Sakamoto, Kenro; Takahashi, Takao; Koitabashi, Takeo; and Fujiwara, Mitsuto,3,580,722.

Fujiwara, Yoshio: *See—*
Eguchi, Yasuhito; Fujiwara, Yoshio; and Tohma, Takaaki,3,580,992.

Fujui Seiren Kako Kabushiki Kaisha: *See—*
Horie, Hajime; Hirano, Tadao; and Suzuki, Tokihide, 3,580,015.

Fukuda, Yasuo: *See—*
Kasahara, Shigekazu; Takahashi, Yuji; Suzuki, Takashi; Umeda, Shinichi; Adachi, Kazuo; and Fukuda, Yasuo,3,580,883.

Fukushima, Yoshio, to Kabushiki Kaisha Ricoh. Aperture position selecting system for use with multi-photographic device. 3,580,153, Cl. 95-36.

Fukushima, Yoshio, to Kabushiki Kaisha Ricoh. Portable traffic sign. 3,580,659, Cl. 350-98.

Fulton, John, to Extel Corporation. Delayed action tape-failure control for high speed tape printer. 3,581,005, Cl. 178-42.

Furbeck, Warren R.: *See—*
Lee, Charles A.; and Furbeck, Warren R.,3,580,784.

Furby, Neal W.; Godfrey, Douglas; and Peeler, Robert L., to Chevron Research Company. Functional fluids containing carbon dioxide for preventing cavitation damage. 3,580,848, Cl. 252-78.

Furman, George R., to Texaco Inc. Support assembly for a travel cylinder having rolling contact with the bed of a printing machine. 3,580,170, Cl. 101-269.

Furstenburg, Alvin J.; and Kujawa, Edmund J. Felt Products Mfg. Co. Method of making a ground mold. 3,579,799, Cl. 29-416.

Gage, Arthur F.; and Stamm, Alex F., to Rockwell-Standard Company, mesne. Variable position means for holding a non-rotating workpiece in friction welding apparatus. 3,580,459, Cl. 228-2.

Gaignon, Maurice: *See—*
Ceyzeriat, Louis; Gaignon, Maurice; and Lefort, Marcel,3,580,939.

Gajovski, Frank R. Method for insulating boiler or like housing wall. 3,579,802, Cl. 29-432.2

Gallasch, Ernst: *See—*
Schwenk, Kurt; Gallasch, Ernst; Hablitzel, Hermann; and Jacob, Friedrich,3,579,727.

Game Innovations, Inc.: *See—*
Mc Carthy, James B., 3,580,578.

Ganter, Wolfgang; and Assmus, Friedrich, to Messrs. Gebruder Junghons Gesellscaft mit Beschrankter Haftung. Tuning fork devices. 3,581,129, Cl. 310-25.

Garber, Howard A. Ice dispensing machine. 3,580,428, Cl. 222-241.

Garbrecht, William L., to Lilly, Eli, and Company. Hydroxyesters of hexa- and octahydroindoloquinolines. 3,580,916, Cl. 260-285.5

Gardenier, Wilhelmus J. G.: *See—*
Broussard, Leo P.; Dickson, Leon L., Jr.; and Gardenier, Wilhelmus J. G.,3,580,334.

Garlock Inc.: *See—*
Merkwacz, Joseph, 3,580,616.

Garnhart, David L.: *See—*
Regan, James L.; and Garnhart, David L.,3,579,935.

Garrett Corporation, The: *See—*
Horacek, Herbert P., 3,580,265.

Garrett, Elgie E.; De Franco, Thomas P.; and Staples, Nicholas B., to Admiral Corporation. Color tube electron shield having outwardly bowed edges directed toward viewing screen to minimize seal edge interference. 3,581,135, Cl. 313-85.

Garrett, Howard R.: *See—*
Hentges, Ronald L.; and Garrett, Howard R.,3,579,958.

Garrod, Norman John. Gramophone record sleeves. 3,580,487, Cl. 229-68.

Gartzke, Rudolf E., to Gartzke's Refrigeration, Inc. Traversable hardware in guideway for shelf or drapery use. 3,579,710, Cl. 16-93.

Gartzke's Refrigeration, Inc.:*See—*
Gartzke, Rudolf E., 3,579,710.

Gaspari, Anthony Mario, to Pall (Canada) Ltd. Sandblasting stencil and method of making same. 3,579,926, Cl. 51-262.

Gatermann, Willi: *See—*
Hermes, Heinz; Thieme, Klaus-Dietrich; Gatermann, Willi; Koerv, Peter; and Mehnert, Walter,3,581,185.

Gates, Lauren W.: *See—*
Hill, Fredrick L.; Gates, Lauren W.; and Colbert, William V.,3,579,968.

Gau, Leonard P., to Chrysler Corporation. Anti-pollution exhaust valve combination with fluidic control and valve cooling features. 3,579,981, Cl. 60-29.

Gaunt, Wilmer B., Jr., to Bell Telephone Laboratories, Incorporated. All-pass filter circuit having negative resistance shunting resonant circuit. 3,581,122, Cl. 307-295.
Gauper, Morris S. Toilet tissue holding and dispensing apparatus. 3,580,651, Cl. 312-39.
Gawlick, Heinz; and Marondel, Gunther, to Dynamit Nobel Aktiengesellschaft. Consumable industrial propellant cartridge. 3,580,180, Cl. 102-101.
Gawlick, Heinz; Stahlmann, Rudolf; and Umbach, Hans, to Dynamit Nobel Aktiengesellschaft. Ammunition for target practice or other short-range purposes. 3,580,179, Cl. 102-92.7
Gawrych, Robert I.: *See—*
Kuzma, John J.; and Gawrych, Robert I.,3,579,891.
Gay, Pierre, to Compagnie des Ateliers et Forges de La Loire (St. Chamond, Firminy, St. Etienne, Jacob-Holtzes). Rolling mill for producing thin strip stock. 3,580,033, Cl. 72-205.
Gearhart, Harlan G., to VSI Corporation. Method and device for heat treatment of metals. 3,580,555, Cl. 266-4.
Gebler, Horst: *See—*
Kegelmann, Gunter; Gebler, Horst; and Seifried, Walter,3,580,798.
Gebruder Boehringer Gesellschaft mit beschrankter Haftung: *See—*
Weber, Lorenz, 3,580,216.
GEHAP Gesellschaft fuer Handel und Patentverwertung mbH & Co., K.G., Firma: *See—*
Schmidt, Karl, 3,579,974.
Geigy Chemical Corporation: *See—*
Zergenyi, Janos; and Habicht, Ernst, 3,580,931.
Gelfenbein, Evgeny Jukhimovich: *See—*
Khimich, Georgy Lukich; Niskovskikh, Vitaly Maximovich; Varaxin, Alexei Ivanovich; Gelfenbein, Evgeny Jukhimovich; Bykov, Leonid Alexandrovich; Litvinov, Anatoly Ivanovich; and Karlinsky, Stanislav Evgenievich,3,580,327.
Gellman Industries, Inc.: *See—*
Provost, Emile L.; and Tomasello, Antonio, 3,580,474.
Genantonio, Anthony: *See—*
Batlas, George X., 3,580,510.
General Electric Company: *See—*
Arnold, Richard B., 3,579,791.
Arnold, Richard B.; and Smith, Dallas F., 3,579,818.
Beaudoin, Norman R.; and Lauben, Robert W., 3,581,253.
Beggs, James E., 3,581,144.
Bloomer, Milton D., 3,581,234.
Boxman, Raymond L., 3,581,142.
Carlson, Gerald J., 3,579,775.
Doherty, Martin C., 3,580,086.
Eriksson, Lars O., 3,581,163.
Fritzsche, Harold L., 3,579,788.
Gentry, Finis E., 3,579,815.
Hewitt, Terry L., 3,579,869.
Holeman, John M., 3,581,280.
Holthenrichs, Philip D.; and Wanger, Robert P., 3,579,929.
Hovious, Thomas C.; and Torkildsen, Robert A., 3,580,741.
Kast, Howard Berdolt, 3,579,805.
Kidd, Thomas L., Jr.; and McClain, Albert D., Jr., 3,580,755.
Littlefield, Derwood F., 3,580,391.
Losert, Gerhard K., 3,581,026.
Lucek, John R., 3,580,714.
Martin, William S., 3,581,229.
McMurray, William, 3,581,212.
Mosher, Ralph S., 3,580,099.
Pest, Jurgen, 3,581,123.
Piccone, Dante E.; and Rosser, Daniel B., 3,581,160.
Rathbun, William H., 3,581,035.
Sarver, James F.; and Hewes, Ralph A., 3,580,860.
Spangler, Fredrick E.; and Schaefer, Henry A., 3,581,249.
Stahl, Laddie L., 3,580,401.
Young, James Roger, 3,580,052.
Zubler, Edward G., 3,580,856.
General Electric Company Limited, The: *See—*
Neild, Donald William, 3,580,496.
General Foods Corporation: *See—*
Dame, Charles, Jr., 3,580,726.
Tolf, Ingvar L.; Herzing, Vernon J.; Miller, Everett L.; and Lightfoot, George L., 3,580,402.
General Impact Extrusions (Manufacturing) Ltd.: *See—*
Rieder, Otto E., 3,579,767.
General Mills, Inc.: *See—*
Gulstad, Clayton O., 3,580,727.
Gulstad, Clayton O.; and Eastburn, Francis J., 3,580,728.
General Motors Corporation: *See—*
Arkus-Duntov, Zora, 3,580,350.
Eppich, Robert E.; and Webbere, Fred J., 3,580,328.
Hammer, Dale F., 3,581,174.
Heck, Burnette, 3,580,368.
Heck, Burnette, 3,580,369.
Hestad, Erling; Ritter, Thomas E.; and De Claire, Alton G., Jr., 3,580,352.
Hitzelberger, Alan L., 3,580,085.
Kirk, Thomas E.; and Stenklyft, Gerald H., 3,581,150.
Peters, Theodore F., 3,580,623.
Rantala, Charles W., 3,580,628.
Rohde, Robert P., 3,579,984.
Whitney, Donald R., 3,580,357.
General Technologies Corporation: *See—*
Milewski, John V.; and Shyne, James J., 3,580,731.
General Tire & Rubber Company, The: *See—*
Uelzmann, Heinz; and Hidinger, David C., 3,580,799.
Genie Grape Harvester, Inc.: *See—*
Sagouspe, Jean; and Riley, Eugene D., 3,579,971.
Genin, Robert, to Child Guidance Toys Inc. Toy railroad assembly. 3,579,904, Cl. 46-216.
Gentex Corporation: *See—*
Aileo, Jackson Anthony, 3,579,637.
Gentiluomo, Joseph A. Putting green including means for sequentially returning holed-out ball to peripherally spaced ball dispensers. 3,580,583, Cl. 273-176.
Gentry, Finis E., to General Electric Company. Process for wafer fabrication of high blocking voltage silicon elements. 3,579,815, Cl. 29-580.
George, Maurice William: *See—*
Everson, Ivor; and George, Maurice William,3,580,803.
Georgia-Pacific Corporation: *See—*
King, Jonathan W., Jr., 3,580,387.
Gerber, Reinhold; Kerrigan, James Edward; and Hawley, Harry Ray, to American Can Company. Brim curling apparatus. 3,579,737, Cl. 18-19.
Gerek, Gene: *See—*
Hartzell, Rowland S.; and Gerek, Gene,3,580,777.
Gerighausen, Werner: *See—*
Perthen, Johannes; Gerighausen, Werner; Kunzmann, Konrad; and Dreyer, Heinz,3,580,062.
Gerity-Schultz Corporation: *See—*
Kenney, James E.; and Ashenfelter, Richard J., 3,580,175.
Gerlach, Fritz; Hauskrecht, Toni; and Holch, Hermann, to Lonza-Werke GmbH. Manufacture of bodies from a bundle of bonded resin tubes. 3,580,764, Cl. 156-83.
Gesellschaft fur Kernforschung mbH: *See—*
Handel, Karlheinz, 3,580,805.
Getson, John Charles, to Stauffer-Wacker Silicone Corporation. Thixotropic organopolysiloxane compositions having pendant methacrylic acid polymer. 3,580,971, Cl. 260-825.
Gettel, Roger W., to Sperry Rand Corporation. Relief valves with controlled pressure override. 3,580,277, Cl. 137-525.5
Gevaert-Agfa N.V.: *See—*
Brinckman, Eric Maria, 3,580,719.
Geymayer, Peter; Billenstein, Siegfried; and Renz, Werner, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Lubricant. 3,580,849, Cl. 252-78.
Giamei, Anthony F.: *See—*
Copley, Stephen M.; Giamei, Anthony F.; Hornbecker, Merton F.; and Kear, Bernard H.,3,580,324.
Gianese, Goffredo, to AMF Incorporated. Cigarette packers. 3,579,953, Cl. 53-59.
Gibeau, Donald E.: *See—*
Belford, John F.; Gibeau, Donald E.; and Ciriello, John,3,581,247.
Giddings & Lewis, Inc.: *See—*
Jones, Gordon H., 3,580,135.
Giglio, Gino. Bathtub construction. 3,579,667, Cl. 4-181.
Gilbert, Edward I., deceased (by Graff, Edith M., administratrix); and Rogers, William A. Adjustable support for tree shaking apparatus. 3,579,970, Cl. 56-328.
Gill, Lester D. Paper board container with platform style bottom. 3,580,473, Cl. 229-21.
Gillis, Wayne A.: *See—*
Stouffer, James R.; Buege, Dennis R.; and Gillis, Wayne A.,3,579,716.
Gilman, John M., to Realistic Company, The. Container closure and apparatus for opening same. 3,580,423, Cl. 222-81.
Gilson, Warren E. Program control apparatus. 3,580,105, Cl. 74-568.
Ginsburgh, Irwin; and Nebelsiek, Hilbert J., to Standard Oil Company (Indiana). Fueling device for automobiles and the like. 3,580,414, Cl. 220-86.
Giraud, Francois Louis, to Societe de L'Aerotrain. Transportation systems. 3,580,184, Cl. 104-165.
Girling Limited: *See—*
Payne, Arthur Albert, 3,580,544.
Gish, David B., to Bell & Howell Company, mesne. Switching apparatus. 3,581,105, Cl. 307-116.
Gladh, Knut Arnold Oscar, to Gladol S.A. Surface wiring systems. 3,580,984, Cl. 174-48.
Gladol S.A.: *See—*
Gladh, Knut Arnold Oscar, 3,580,984.
Glaverbel, S.A.: *See—*
Plumat, Emile; and Duthoit, Jean, 3,579,720.
Glaze, Ardelle, to Fort Wayne Metals, Inc. Method of producing multitudinous straight cut-to-length filaments in oriented form. 3,580,783, Cl. 156-426.
Globotex AG: *See—*
Vorberg, Fritz, 3,580,437.
Gmeiner, Gunter; and Grabner, Christian, to Daimler-Benz Aktiengesellschaft. Installation for controlling the closing condition of parts adapted to be mutually locked, especially in motor vehicles. 3,580,624, Cl. 292-216.
Goad, Albert, to Rotax Limited. Ball screw and nut mechanism. 3,580,098, Cl. 74-459.

Godfrey, Douglas: *See—*
Furby, Neal W.; Godfrey, Douglas; and Peeler, Robert L.,3,580,848.

Gogarty, William B.; and Mc Atee, Richard W., to Marathon Oil Company. Method for stabilizing the mobility of polyacrylamide solutions flowing through porous media. 3,580,337, Cl. 166-273.

Goldberg, Newton N., to Westinghouse Electric Corporation. Stabilization of cholesteric-phase liquid crystal compositions against true solid formation using cholesteryl p-nonylphenyl carbonate. 3,580,865, Cl. 252-408.

Goldberg, Newton N.; and Fergason, James L., to Westinghouse Electric Corporation. Cholesteric-phase liquid-crystal compositions stabilized against true-solid formation, using cholesteryl erucyl carbonate. 3,580,864, Cl. 252-408.

Gollwitzer, George E., to Kelsey-Hayes Company. Wheel rounding machine. 3,580,043, Cl. 72-402.

Goltner, Wolfgang: *See—*
Kurzke, Herbert; Goltner, Wolfgang; and Seifried, Walter,3,580,963.

Goodman, Jerry M.: *See—*
Caneer, Ralph A.; Anderson, William J.; Morgan, Bert B.; and Goodman, Jerry M.,3,579,760.

Goodnow, Daniel M. Synchronous spark timer. 3,580,063, Cl. 73-118.

Goodrich, B. F., Company, The: *See—*
Bialkowski, Ludwik S., 3,580,365.
Plaat, C Lucas; and Linn, Donald F., 3,580,366.
Siebert, Alan R., 3,580,830.

Goodway Inc.: *See—*
Kalman, Mario, 3,579,947.

Goodyear Tire & Rubber Company, The: *See—*
Wilson, Farris H., Jr., 3,580,884.

Gordon, Abraham: *See—*
Plawner, Moshe L.; Vento, Vincent R.; and Gordon, Abraham,3,580,363.

Gordon, Ernest S. Optical density calibrated photometer. 3,580,684, Cl. 356-226.

Gorter, Werner; and Hauser, Johann, to SEMPERIT Osterreichisch-Amerikanische Gummiwerke Aktiengesellschaft. Pneumatic tyre. 3,580,319, Cl. 152-361.

Goss, John B. Control apparatus for high pressure water system. 3,580,509, Cl. 239-302.

Gossling, Robert C.; and Armstrong, George, said Gossling assor. to Clopay Corporation. Window shade. 3,580,323, Cl. 160-263.

Goto, Kenjiro, to Mansei Kogyo Kabushiki Kaisha. Liquefied gas-fueled smoking lighter utilizing piezo-electric elements as the voltage generation source. 3,580,698, Cl. 431-255.

Gott, Hans; and Ritter, Josef, to EVG Entwicklungs und Verwertungs-Gesellschaft m.b.H. Machine for coiling elongated strip-like material. 3,580,018, Cl. 72-12.

Gotze, Christian: *See—*
Hennig, Fridolin; Kellner, Hans-Jurgen; Potz, Klaus; and Gotze, Christian,3,580,443.

Gould, Joseph C.: *See—*
Hick, Robert M., Jr.; and Gould, Joseph C.,3,580,796.

Grabner, Christian: *See—*
Gmeiner, Gunter; and Grabner, Christian,3,580,624.

Grabowski, Thomas S., to Borg-Warner Corporation. Discontinuous polycarbonate coatings. 3,580,730, Cl. 117-8.

Grace, W. R., & Co.: *See—*
Dunn, William H., Jr., 3,580,300.

Grady, Charles B., Jr., to Metrodynamics Corporation, The. Regulated DC power supply. 3,581,187, Cl. 323-17.

Grahn, Robert D., to Sunbeam Corporation. Hedge trimmer. 3,579,827, Cl. 30-144.

Grams, Richard A., to Babcock & Wilcox Company, The. Vapor generator. 3,579,990, Cl. 60-73.

Granberg, Mauritz L.; and Mueller, Hubert W., Jr., to Sperry Rand Corporation. Digital to analog current distribution circuit. 3,581,076, Cl. 235-154.

Granstrom, Ernst Henning Ture: *See—*
Andersson, Gustav Mattias; and Granstrom, Ernst Henning Ture,3,579,936.

Grant, Charles Clark Simpson, to Ibbett Engineering Company Limited. Trailer towing arrangement. 3,580,608, Cl. 280-405.

Graves, Mary E. Therapeutic device oscillating device. 3,580,244, Cl. 128-25.

Graves, Rodney J. Automated controlled environment for continuous production of plant life. 3,579,907, Cl. 47-17.

Graving, Robert S. Method of producing a rolled bundle of preformed valley flashing. 3,579,946, Cl. 53-21.

Green, Harry S. Floating, sea water distillation apparatus using a recirculating, directly contacting fluent heating medium. 3,580,814, Cl. 202-234.

Green, Martin, to Blazon, Inc. Chain swing. 3,580,571, Cl. 272-85.

Greenberg, Sol; Rosen, Heinz; Weinberger, Richard; and Mongodin, Guy, to Veeco Instruments, Incorporated. Vacuum gauge. 3,580,081, Cl. 73-399.

Greenleaf, James O., to Stepan Chemical Company, mesne. Roofing tile. 3,579,940, Cl. 52-542.

Greenspan, Lawrence E.; and Whitaker, Earl J., to Sanders Associates, Inc. Apparatus for altering computer memory by bit, byte or word. 3,581,287, Cl. 340-172.5

Gregson, Robert E., to Motorola, Inc. SCR slaving circuit. 3,581,114, Cl. 307-252.

Grente, Lucien Ernest; and Leveque, Roger, to International Standard Electric Corporation. Machine for the manufacture of relay coil bobbins. 3,579,789, Cl. 29-203.

Gressitt, Tillman J., to Bell Telephone Laboratories, Incorporated. Apparatus and method for applying indexing strips to cable pair groups. 3,579,823, Cl. 29-630.

Grib, Boris F., to Philamon Incorporated. Counterbalanced resiliently supported tuning fork. 3,581,130, Cl. 310-25.

Griffin, Anthony L.; and Chetwynd, Earl G. Card retainer. 3,579,878, Cl. 40-10.

Griffith, Edwin D., to Owens-Illinois, Inc. Hermetically-sealed composite container. 3,580,464, Cl. 229-5.6

Griffith, George L., to Commercial Solvents Corporation. TMETN-inorganic nitrate explosives blended with petroleum oil. 3,580,750, Cl. 149-38.

Griffith, George L., to Commercial Solvents Corporation. TMETN-inorganic nitrate explosives blended with hot inorganic nitrate. 3,580,751, Cl. 149-38.

Griffith, George L., to Commercial Solvents Corporation. TMETN-inorganic nitrate explosives blended with water. 3,580,752, Cl. 149-38.

Griffith, George L., to Commercial Solvents Corporation. TMETN-inorganic nitrate explosives blended with aluminum. 3,580,753, Cl. 149-39.

Griffith Laboratories, Inc., The: *See—*
Schnell, Carl, 3,580,315.

Griffith, Norman N.: *See—*
Frankenberg, Edward V.; and Griffith, Norman N.,3,580,310.

Griffiths, Thomas C.: *See—*
Beatty, Robert D., Jr.; and Griffiths, Thomas C.,3,581,277.

Grotheer, Morris P.: *See—*
Currey, John E.; Grotheer, Morris P.; and Cook, Edward H., Jr.,3,580,824.

Grove, Marvin H., to M&J Valve Company, and M&J Development Company. Resilient O-ring and method of manufacture. 3,580,765, Cl. 156-110.

Gruenman, Vsevolod; Hoffer, Max; O'Brien, Jay Philip; Rachlin, Albert Israel; and Zbinden, Gerhard, to Hoffmann-La Roche Inc.N,N'-bis-(aminoalkyl)-benzyl- amines. 3,580,949, Cl. 260-570.5

Grundschober, Friedrich; and Sambeth, Joerg, to Aktiebolaget Stadex. Apparatus for applying a coating of adhesive material on to a support. 3,580,218, Cl. 118-621.

Grundy, Gary, to United States of America, Air Force, mesne. Photocurrent diverter. 3,581,119, Cl. 307-288.

GTE Automatic Electric Laboratories, Incorporated: *See—*
Belcastro, Richard J., 3,581,110.

Gualdipex S.A.: *See—*
Heiberger, Ernst, 3,579,920.

Guarrasi, Joseph S. Portable hair wash sink. 3,579,656, Cl. 4-159.

Gubin, Georgy Viktorovich: *See—*
Bushuev, Vladimir Pavlovich; Gubin, Georgy Viktorovich; Zolotarev, Petr Semenovich; Sorokin, Vladimir Andreevich; Palamarchuk, Vladimir Ivanovich; and Dmitrenko, Viktor Makarovich,3,580,554.

Guenthard, Jacques, to Sandoz Ltd., a/k/a Sandoz A.G. Anthraquinone dyes, their production and use. 3,580,933, Cl. 260-372.

Guerreiro, Antone M.: *See—*
De Voss, Edwin A.; and Guerreiro, Antone M.,3,580,044.

Guest, Dorothy Joyce: *See—*
Corry, Alfred Reginald; Guest, Dorothy Joyce; and Williamson, William Ian,3,580,877.

Guiriec, Raymond, to Societe a Responsabilite Limitee Laboraver. Self-injectable ampoule. 3,580,251, Cl. 128-220.

Gukelberger, Thomas F., Jr.: *See—*
Blakeslee, A Eugene; Gukelberger, Thomas F., Jr.; and Lyons, Vincent J.,3,580,732.

Gul, Valentin Evgenievich: *See—*
Shenfil, Leonid Zalmanovich; Gul, Valentin Evgenievich; Melnikova, Galina Konstantinovna; Siprikova, Nina Isidorovna; Rozhdestvenskayam, Maiya Konstantinovna; and Kuzina, Alexandra Nikitichna,3,580,776.

Gulf Energy & Environmental Systems, Inc.: *See—*
Bokros, Jack C., 3,579,645.

Gulf Research & Development Company: *See—*
Heilmann, William J., 3,580,893.
Hill, Robert W., 3,580,944.
Swift, Harold E., 3,580,970.

Gulstad, Clayton O., to General Mills, Inc. Process for making expanded snack product. 3,580,727, Cl. 99-81.

Gulstad, Clayton O.; and Eastburn, Francis J., to General Mills, Inc. Process for making expanded snack product. 3,580,728, Cl. 99-81.

Gundersen, James L.: *See—*
Perkins, Carroll R.; Shaffstall, Everett L.; Gundersen, James L.; and Yoder, Robert N.,3,581,226.

Gunther, Peter; Oberkirch, Wolfgang; and Pampus, Gottfried, to Farbenfabriken Bayer Aktiengesellschaft. Process for polymerizing cyclopentene. 3,580,892, Cl. 260-93.1

Gunyou, John Christie; and Browning, Stanley Albert Charles, to Hybride Turkeys Limited. Applicator for bag closures. 3,579,955, Cl. 53-138.

Gurevich, Leonid Mikhailovich. Device to facilitate removal of asbestos-cement pipes from the mandrel in a plant for manufacture of such pipes. 3,579,756, Cl. 25-30.

Gurrieri, Salvatore J., to Pilarski, Anthony J. Swimming pool cover drain. 3,579,657, Cl. 4-172.12

Gustafson, Ake, to Tetra Pak AG. Apparatus for forming a tube from a travelling web. 3,580,788, Cl. 156-497.

Guth, Eugene D.; Lewis, Jerry L.; and Van Nice, Leslie J., to TRW Inc. Process for preparing isobutene and the apparatus therefor. 3,580,961, Cl. 260-683.3

Guyer, Reynolds W., Jr.; and Kruse, Wilbert A., said Krause assor to said Guyer, d/b/a Winsor Concepts. Toy gun with stretchable diaphragm. 3,580,234, Cl. 124-21.

Habicht, Ernst: *See—*
Zergenyi, Janos; and Habicht, Ernst,3,580,931.

Hablitzel, Hermann: *See—*
Schwenk, Kurt; Gallasch, Ernst; Hablitzel, Hermann; and Jacob, Friedrich,3,579,727.

Haene, Antonio C. P.: *See—*
Mac Phee, Colin A. A.; and Haene, Antonio C. P.,3,580,743.

Hafeli, Otto F. Trailer jack. 3,580,543, Cl. 254-100.

Haft, Harry H.; and Repsher, Robert W., to Westinghouse Electric Corporation. Fluorescent lamp having tio-containing glass envelope and reduced phosphor weight. 3,581,139, Cl. 313-109.

Hagan, Melvin A.; and Batista, Roy I., to TRW Inc. Tantalum clad niobium. 3,579,808, Cl. 29-497.5

Hagemeister, Per Juel: *See—*
Hansen, Viggo Rasmus; and Hagemeister, Per Juel,3,580,522.

Hagenah, Klaus, to Hauni-Werke Korber & Co. K.G. Apparatus for transporting and collecting shredded tobacco or the like. 3,580,645, Cl. 302-59.

Hagstrom, Arthur A., to Teletype Corporation. Inverted selector mechanism. 3,581,004, Cl. 178-33.

Hairston, James J., Jr.: *See—*
Ransohoff, Jackson A.; and Hairston, James J., Jr.,3,581,095.

Hale, Harry T., to Carrier Corporation. Refrigeration system. 3,580,005, Cl. 62-149.

Haley, David Merl, to California Car Wash Systems, Inc. Car washing apparatus. 3,579,700, Cl. 15-21.

Hall, Charles Thomas: *See—*
Davies, Robert William; Hall, Charles Thomas; Hinchcliffe, Dennis; McCombie, Alan Keith; and Youngman, Derek Henry,3,579,952.

Hall, Frank B., to Pettibone Corporation. Electrical relay circuitry. 3,581,157, Cl. 317-136.

Hall, Robert Leonard, to Monsanto Chemicals Limited. Containers. 3,580,485, Cl. 229-51.

Hall, Russell W., Jr.: *See—*
Allen, Joseph C.; Bednarski, Valery N.; and Hall, Russell W., Jr.,3,580,335.

Hallerback, Stig Lennart. Method of manufacturing rolling bearing components. 3,579,782, Cl. 29-148.4

Hallett, Thomas E., to BRD, Inc. Single-channel electronic question-response system. 3,579,861, Cl. 35-48.

Halley, James W., to Inland Steel Company. Forming of thin metal filaments. 3,581,040, Cl. 219-7.5

Hallock, Robert Lay. Magnetic hammer. 3,580,312, Cl. 145-30.

Halm, Richard. Electromagnetic make-and-break ignition device for a pocket lighter. 3,581,155, Cl. 317-81.

Hamilton, Donald E.: *See—*
Fenner, Robert M.; and Hamilton, Donald E.,3,580,570.

Hamilton, Douglas D., 1/3 to Canadian International Paper Company, 1/3 to Quebec North Shore Paper Company, and 1/3 to Abitibi, St. Ann, Paper Ltd. Tree processing apparatus with feed rolls. 3,580,308, Cl. 144-3.

Hamilton, Joseph R., to Lynch Corporation. Spraying mechanism for glassware forming machines. 3,580,711, Cl. 65-169.

Hammann, Heinz; and Dick, Werner, to Lico AG. Concrete and the like mixer. 3,580,551, Cl. 259-152.

Hammelmann, Paul; and Lettmann, Heinz. Submersible cleaning gun. 3,580,511, Cl. 239-419.5

Hammer, Dale F., to General Motors Corporation. Automatic reversing circuit for a window regulator motor control system. 3,581,174, Cl. 318-266.

Hammond, Robert A.; and Presta, Eugene A., to Diebold Incorporated. Video multiplexer-switcher with sequence recycling upon loss of video. 3,580,998, Cl. 178-6.8

Hammond, Robert A.: *See—*
Sandorf, Robert E.; and Hammond, Robert A.,3,580,993.

Hancock, Roger Harvey Yorke: *See—*
Firth, Donald; Hancock, Roger Harvey Yorke; and McCallum, James,3,579,988.

Handel, Karlheinz, to Gesellschaft fur Kernforschung mbH. Safety device for nuclear reactors with means for preventing control rod ejection. 3,580,805, Cl. 176-36.

Hannah, Amos F. Toy hay baler. 3,579,899, Cl. 46-39.

Hannah, John: *See—*
Patchett, Arthur A.; and Hannah, John,3,580,936.

Hansbrough, David L.: *See—*
Calud, Romeo T.; Hansbrough, David L.; and Zaumseil, Dean R.,3,581,169.

Hansen, Arne, to Kidde, Walter & Company, Inc. Combined pressurizing and relief valve for fire extinguishers. 3,580,274, Cl. 137-493.

Hansen, Benth Preben; and Blitz, Saul, to T. W. Maunfacturing Company, Inc. Machine for producing hollow articles. 3,579,725, Cl. 18-5.

Hansen, Dan Sigurd, to Smidth, F. L., & Co. Stack preheater. 3,580,552, Cl. 263-32.

Hansen, Peter: *See—*
Fratzscher, Helmut; Klein, Kurt; Maluzi, Joachim; Hansen, Peter; and Schmitz, Werner,3,580,844.

Hansen, Richard C.; Mahler, Charles J.; Soures, Nicholas M.; and Stickney, Thomas L., to Xerox Corporation. Incremental stepping paper drive. 3,581,000, Cl. 178-7.6

Hansen, Siegfried, to Hughes Aircraft Company. Survey level. 3,580,687, Cl. 356-248.

Hansen, Viggo Rasmus; and Hagemeister, Per Juel, to Harnden, C. A., Limited. Method and arrangement for winding a continuous web. 3,580,522, Cl. 242-56.

Hanson, Iner O. Screed holding device. 3,579,938, Cl. 52-365.

Hanson, John R.; and Pierson, Karl B., to Tiona-Betts, Inc. Valve. 3,580,275, Cl. 137-516.29

Hanzawa, Teruo: *See—*
Iwama, Masakuni; Inoue, Isaburo; and Hanzawa, Teruo,3,580,721.

Harland, Geoffrey; and Ronayne, John P., to International Standard Electric Corporation. Multi-stage telephone switching network. 3,581,018, Cl. 179-22.

Harnden, C. A., Limited: *See—*
Hansen, Viggo Rasmus; and Hagemeister, Per Juel, 3,580,522.

Harnischfeger Corporation: *See—*
Siegel, Charles R.; and Schneider, Karl, 3,580,405.
Thew, Donald G., 3,581,104.

Harrington, Edwin C., Jr., to Monsanto Company. Machining method. 3,580,134, Cl. 90-13.

Harris, Dale K., to Cities Service Company. Lock and seal means for longitudinally movable member inserted into a vessel. 3,580,279, Cl. 137-590.

Harris-Intertype Corporation: *See—*
Kolb, Edwin R.; and Horvath, Robert M., 3,581,302.
Sarka, Albert J.; and Blake, Trevor H., 3,580,676.

Harrison, Guy K., Jr.: *See—*
Winter, John W.; and Harrison, Guy K., Jr.,3,579,847.

Hartley Controls Corporation: *See—*
Hartley, Nelson, 3,580,422.

Hartley, Nelson, to Hartley Controls Corporation. Apparatus for adding finely divided solid material to a mixture. 3,580,422, Cl. 222-57.

Hartzell, Rowland S.; and Gerek, Gene, to PPG Industries, Inc. Method of bonding asbestos sheet material to concrete. 3,580,777, Cl. 156-278.

Harvey, Donald M., to Eastman Kodak Company. Photochromic exposure control. 3,580,148, Cl. 95-10.

Harvey, Jay A.: *See—*
Webb, Thomas Alan; and Harvey, Jay A.,3,580,997.

Hashimoto, Hideo, to Kabushiki Kaisha Ricoh. Automatic elevating mechanism for a paper feed platform of an automatic paper feed device for use with a photocopying machine, printing press, or the like. 3,580,567, Cl. 271-62.

Haskon Incorporated: *See—*
Hentges, Ronald L.; and Garrett, Howard R., 3,579,958.

Hasler A. G.: *See—*
Laderach, Peter, 3,581,112.

Hatsukano, Yoshikazu; and Nomiya, Kosei, to Hitachi, Ltd. Electronic display system. 3,581,065, Cl. 235-92.

Hauni-Werke Korber & Co. K.G.: *See—*
Hagenah, Klaus, 3,580,645.

Hauser, Johann: *See—*
Gorter, Werner; and Hauser, Johann,3,580,319.

Hausknecht, Louis A. Motor speed control device. 3,581,177, Cl. 318-330.

Hauskrecht, Toni: *See—*
Gerlach, Fritz; Hauskrecht, Toni; and Holch, Hermann,3,580,764.

Haveg Industries, Inc.: *See—*
Havewala, Jamshed Behram, 3,580,982.

Havewala, Jamshed Behram, to Haveg Industries, Inc. Pole riser guard-back-up plate combination. 3,580,982, Cl. 174-45.

Hawk Oil Field Equipment Corporation: *See—*
Maasshoff, Gunter, 3,580,138.

Hawley, Edwin L., to E. P. S. (Research & Development) Limited. Strip fasteners. 3,579,747, Cl. 24-201.

Hawley, Harry Ray: *See—*
Gerber, Reinhold; Kerrigan, James Edward; and Hawley, Harry Ray,3,579,737.

Haws Drinking Faucet Company: *See—*
Wright, Allen C., 3,580,542.

Hayakawa, Yoshihiro: *See—*
Onishi, Akira; Anzai, Shiro; Irako, Koichi; Fujio, Ryota; Hayakawa, Yoshihiro; and Miyamoto, Shoji,3,580,895.

Hayashi, Shinichi: *See—*
Yamamura, Katsumi; Miyasaka, Tsugumitsu; Hayashi, Shinichi; Yamamoto, Masao; and Matsubara, Yukio,3,580,820.

Hayashi, Yasutoshi. End plate forming apparatus. 3,580,025, Cl. 72-84.

Hayes Albion Corporation: *See—*
Warner, Robert F., 3,580,056.

Hayes, Edward J.; and Crick, Stephen E., to Kelsey-Hayes Company. Method for manufacturing wheels. 3,579,783, Cl. 29-159.

Hayes, Thomas H., to Lilly, Eli, and Company. Pill dispenser with indicating means. 3,579,883, Cl. 40-107.

Hays, Gordon W.: *See—*
Mills, James Claiborne, Jr.; and Hays, Gordon W.,3,579,957.

Hazel, Jack A., to C.A.V. Limited. Machine tool cut-off slide. 3,580,118, Cl. 82-46.
Hazemag Hartzerkleinerungs- und Zementmaschinenbau-Gesellschaft, m.b.H.: *See*—
Andreas, Ehrhardt, 3,580,537.
HC Electronics, Inc.: *See*—
Armstrong, Merritt S., 3,581,223.
Heaslett, Alistair Michael: *See*—
Bigg, Geoffrey James; and Heaslett, Alistair Michael,3,581,176.
Heatwole, Oliver W. Key-adjustable harmonica. 3,580,125, Cl. 84-377.
Hebert, Gerard E., to Lockhart Manufacturing Corporation. Storage rack. 3,580,602, Cl. 280-79.3
Heck, Burnette, to General Motors Corporation. Disc brake cooling means and pump drive mechanism. 3,580,368, Cl. 188-264.
Heck, Burnette, to General Motors Corporation. Liquid-cooled disc brake assembly. 3,580,369, Cl. 188-264.
Hecker, Robert W., Jr.; and Beckwith, Robert C., to Loomis Machine Company. Dockboard. 3,579,696, Cl. 14-71.
Hedberg, Ronald M. Marine seismic exploration. 3,581,273, Cl. 340-7.
Heffernan, Bart T.; and Ostrowsky, Efrem M. Heart valve assembly and method of implanting in the body. 3,579,642, Cl. 3-1.
Heiberger, Ernst, to Gualdipex S.A. Polishing machine for workpieces. 3,579,920, Cl. 51-164.
Heid, Christian; and Keil, Karl-Heinz, to Cassella Farbwerke Mainkur Aktiengesellschaft. Stable alkali chlorite mixtures. 3,580,851, Cl. 252-99.
Heidenhain, Johannes, Dr.: *See*—
Kraus, Heinz; and Holstein, Siegbert, 3,579,836.
Heilmann, William J., to Gulf Research & Development Company. Process for the preparation of cyclic acid anhydrides. 3,580,893, Cl. 260-78.5
Heim, Gerhard, to Daimler-Benz Aktiengesellschaft. Installation for closing or opening apertures in vehicles. 3,580,629, Cl. 296-137.
Heimberger, Werner; and Schmitt, Hermann, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Biologically active substituted -s-triazines. 3,580,912, Cl. 260-247.5
Hein, Rolf. Bubble blowing device. 3,579,898, Cl. 46-7.
Heinen, Irving Joseph. Rotatable multi-port valve with fluid pressure controlled valve means. 3,580,540, Cl. 251-159.
Heinkel, Ernst Aktiengesellschaft: *See*—
Eggstein, Giorgio; and Ungerer, Heinz, 3,580,361.
Heinonen, Martti, to Valmet Oy. Device for manufacturing blades for the blade wheel of an axial flow machine. 3,580,039, Cl. 72-316.
Heinzel, Joseph A., to Olin Corporation. Snap off telescope mount. 3,579,840, Cl. 33-50.
Heinzelman, Earl E., to Armstrong Cork Company. Dry lubricant coating of extruded tubing. 3,579,732, Cl. 18-14.
Held, Gerhard R. Self-air cooling abrading wheel. 3,579,928, Cl. 51-356.
Hellborg, Lars Ingvar, to Sobrafina S.A., mesne. Apparatus for uniting a plurality of first objects with a corresponding number of second objects. 3,579,785, Cl. 29-200.
Heller, David S.: *See*—
Stone, Raymond A.; Lister, Fred; and Heller, David S.,3,580,876.
Helmerich & Payne, Inc.: *See*—
Van Scoy, Davis A., 3,580,539.
Helrigel, Robert A.; Brownell, James R.; Ward, Roderick K.; and Keithley, Harry E., to Bliss, E. W., Company. Cushion mounting in punch press. 3,580,558, Cl. 267-114.
Henderson, William P. Method of verifying the replacement of a damaged windshield. 3,579,798, Cl. 29-401.
Hendricks, Grover E. Underwater projectile for firing a cartridge upon impact. 3,580,172, Cl. 102-48.
Hendriks, Adrianus Anthonius Maria, to U.S. Philips Corporation, mesne. Gas discharge tube with cold cathode suitable for the simultaneous reproduction of two legible characters. 3,581,138, Cl. 313-109.5
Hennig, Fridolin; Kellner, Hans-Jurgen; Potz, Klaus; and Gotze, Christian, to Agfa-Gevaert Aktiengesellschaft. Apparatus for opening film cassettes. 3,580,443, Cl. 225-96.5
Henry, Colonel. Animal halters. 3,579,963, Cl. 54-24.
Henshaw, James N., to USM Corporation. Fastener inserting machines. 3,580,457, Cl. 227-116.
Hensley, Loyd D.: *See*—
Prasse, Herbert F.; and Hensley, Loyd D.,3,580,589.
Hentges, Ronald L.; and Garrett, Howard R., to Haskon Incorporated. Machine for forming, filling, and sealing containers. 3,579,958, Cl. 53-183.
Herbert, David B.; and Barney, Ronald N., to Norton Company. Flexible refractory curtain. 3,580,322, Cl. 160-231.
Hermes, Heinz; Thieme, Klaus-Dietrich; Gatermann, Willi; Koerv, Peter; and Mehnert, Walter, to LICENTIA Patent-Verwaltungs-G.m.b.H. Electric circuit for generating a programmable multi-phase alternating current. 3,581,185, Cl. 321-7.
Hernandez, Tomas; and Lorenzo, Valentin E. Method of controlling humidity contamination of hygroscopic material handling machines. 3,579,848, Cl. 34-15.
Herr, John Addison: *See*—
Klawunn, Herbert G.; and Herr, John Addison,3,580,780.
Herwig, Walter: *See*—
Brinkmann, Ludwig; Cherdron, Harald; and Herwig, Walter,3,580,965.
Herzing, Vernon J.: *See*—
Tolf, Ingvar L.; Herzing, Vernon J.; Miller, Everett L.; and Lightfoot, George L.,3,580,402.
Heseltine, Donald W.: *See*—
Mee, John D.; and Heseltine, Donald W.,3,580,911.
Hestad, Alfred M.: *See*—
Ribner, Morris; and Hestad, Alfred M.,3,581,020.
Hestad, Erling; Ritter, Thomas E.; and De Claire, Alton G., Jr., to General Motors Corporation. Steering torque servo. 3,580,352, Cl. 180-79.2
Hetland, Thomas E., to Whirlpool Corporation. Vacuum cleaner motor control. 3,579,706, Cl. 15-327.
Hetzel, Marvin E.: *See*—
Cervenka, Joseph J.; and Hetzel, Marvin E.,3,579,787.
Hewes, Ralph A.: *See*—
Sarver, James F.; and Hewes, Ralph A.,3,580,860.
Hewitt, Eugene E., to Uniroyal, Inc. Apparatus for welding thermoplastic sheet material. 3,580,793, Cl. 156-579.
Hewitt, Harlan Douglas. Vehicle tilt compensator. 3,580,354, Cl. 180-104.
Hewitt, Terry L., to General Electric Company. Automatic answer confirmation system. 3,579,869, Cl. 35-48.
Hexdall, Andrew M. Heavy duty metal snips. 3,579,828, Cl. 30-251.
Heywood, Vincent E.; Bushey, Donald H.; and Chapman, William A., Jr., to United States Envelope Company. Apparatus and method for banding groups of envelopes. 3,579,944, Cl. 53-3.
Hibi, Masao; and Nishimura, Takeshi, to Hitachi, Ltd. Solid state image pick-up device. 3,581,097, Cl. 250-209.
Hick, Robert M., Jr.; and Gould, Joseph C., to Du Pont de Nemours, E. I., and Company. Glass laminated by an adhesive comprising the polyurethane resulting from the reaction of bis(2- isocyanatoethyl) fumarate with polyols without other isocyanate. 3,580,796, Cl. 161-190.
Hickman, Norman A., to Statham Instruments Inc. Flowmeter probe. 3,580,071, Cl. 73-194.
Hicks, Harris Vernon, to Lucas, Joseph, (Industries) Limited. Composite lenses. 3,580,663, Cl. 350-189.
Hidinger, David C.: *See*—
Uelzmann, Heinz; and Hidinger, David C.,3,580,799.
Hidy, Phil H.; and Young, Vernon V., to Commercial Solvents Corporation. Process for recovering fermentation estrogenic substance. 3,580,929, Cl. 260-343.2
Hidy, Phil, to Commercial Solvents Corporation. Synthetic fermentation medium and process using same for cultivating Gibberella zeae. 3,580,811, Cl. 195-100.
Hieber, Fritz; Burger, Erich; and Huber, Hans-Peter, to Agfa-Gevaert Aktiengesellschaft. Strip scanning copying apparatus. 3,580,675, Cl. 355-50.
Higashimura, Einosuke; Tamai, Katsumi; and Nakamura, Eiichi, to Mitsubishi Rayon Co., Ltd. Gelable compositions and process of using the same. 3,580,879, Cl. 260-29.7
Higgason, Frank G., Jr.; and Sehnert, Robert J., to Ludlow Typograph Company. Apparatus for the production of coded intelligence on a record medium. 3,580,494, Cl. 234-6.
Higgins, Irwin R., to Chemical Separation Corporation. Down flow ion exchange. 3,580,842, Cl. 210-25.
Hilburn, Luell. Clamping fixture for use in a hoisting and lifting device. 3,580,626, Cl. 294-67.
Hill, Alan E. Ballast for a plurality of parallel gaseous discharges. 3,581,146, Cl. 315-180.
Hill, Franz, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Planetary-gear transmission with interconnected sun gears and ring gears. 3,580,109, Cl. 74-763.
Hill, Fredrick L.; Gates, Lauren W.; and Colbert, William V., to University of California, The Regents of the. Crop harvester adjustable for different row spacings and for different types of finial operation. 3,579,968, Cl. 56-327.
Hill, Robert W., to Gulf Research & Development Company. Unsaturated alkyl sulfamates and method of preparation. 3,580,944, Cl.
Hill, Sumner B.: *See*—
Veater, Donald J.; Hill, Sumner B.; and Ruffner, Lawrence J.,3,581,167.
Hille Engineering Company Limited, The: *See*—
Wilson, Alexander Ian, 3,580,034.
Hills, Stanley, to ESB Incorporated. Electrolytic process for purifying iron dissolved from scrap steel. 3,580,825, Cl. 204-112.
Hinchcliffe, Dennis: *See*—
Davies, Robert William; Hall, Charles Thomas; Hinchcliffe, Dennis; McCombie, Alan Keith; and Youngman, Derek Henry,3,579,952.
Hinchliffe, Basil W., to Koppers Company, Inc. Condition responsive water quench in a closed coke cooling system. 3,580,813, Cl. 201-39.
Hinckley, Henry R., & Company: *See*—
Hinckley, Henry R., 3,580,208.
Hinckley, Henry R., to Hinckley, Henry R., & Company. Rudder control for a sail boat. 3,580,208, Cl. 114-163.
Hinckley, Thayer C. Burner for cigarette lighter. 3,580,700, Cl. 431-344.
Hini, Paul, to Siemens Aktiengesellschaft. Method of making galvanomagnetic resistor utilizing grid for short-circuiting hall voltage. 3,579,820, Cl. 29-610.
Hirano, Tadao: *See*—
Horie, Hajime; Hirano, Tadao; and Suzuki, Tokihide,3,580,015.
Hirschey, Kenneth A. Combination car seat and crib. 3,579,673, Cl. 5-94.

Hitachi Electronics Co., Ltd.: *See—*
Ohi, Kunio; Inoue, Hideaki; Nakayama, Toshio; and Ishii, Sosuke, 3,581,245.
Hitachi, Ltd.: *See—*
Abe, Katsuro; Kakinuma, Saburo; and Uno, Masaaki, 3,579,986.
Hatsukano, Yoshikazu; and Nomiya, Kosei, 3,581,065.
Hibi, Masao; and Nishimura, Takeshi, 3,581,097.
Iwamoto, Shoji; and Horikoshi, Hisashi, 3,581,291.
Miura, Tanetoshi; Koshikawa, Tsuneji; Nakano, Yasuaki; and Nakayama, Takeshi, 3,581,192.
Murayama, Yoshimasa; and Kurono, Hirokazu, 3,581,232.
Suzuoka, Takayuki, 3,581,166.
Tsuboi, Takashi; and Narita, Hiroshi, 3,581,172.
Watanabe, Ryozi; and Kobayashi, Yutaka, 3,581,188.
Yaegashi, Toshio, 3,579,781.
Hitzelberger, Alan L., to General Motors Corporation. Pointer stabilizer. 3,580,085, Cl. 73-496.
Hobart Manufacturing Company, The: *See—*
Meyers, Theodore F., 3,581,057.
Hobbs, Peter Alfred, to National Research Developmnet Corporation. Machines for planting tubers and the like. 3,580,417, Cl. 221-224.
Hochstetler, Eli. Machine for processing wheelbarrow handles. 3,580,309, Cl. 144-11.
Hodapp, Donald C.: *See—*
Barnard, Walter C.; and Hodapp, Donald C.,3,580,008.
Hoenisch, Walter H., to King-Seeley Thermos Co. Method and apparatus for dispensing ice cubes and the like. 3,580,416, Cl. 221-203.
Hoerner Waldorf Corporation: *See—*
Mobley, Odess V., 3,580,475.
Hoffer, Max: *See—*
Gruenman, Vsevolod; Hoffer, Max; O'Brien, Jay Philip; Rachlin, Albert Israel; and Zbinden, Gerhard,3,580,949.
Hoffman, Ernest G.: *See—*
La Pointe, Lloyd J.; Voegelin, Howard J.; and Hoffman, Ernest G.,3,580,498.
Hoffmann, Heinrich; and Wagner, Wilhelm, to Daimler-Benz Aktiengesellschaft. Air-compressing injection-type internal combustion engine with externally controlled ignition and quality regulation. 3,580,230, Cl. 123-32.
Hoffmann, Wolfgang; and Wick, Paul, to Canadian International Paper Company. Packaging apparatus. 3,579,956, Cl. 53-159.
Hoffmann-La Roche Inc.: *See—*
Cosentino, Louis Ciro, 3,580,240.
Gruenman, Vsevolod; Hoffer, Max; O'Brien, Jay Philip; Rachlin, Albert Israel; and Zbinden, Gerhard, 3,580,949.
Lehr, Hanns Hanina, 3,580,909.
Hofmann, Horst: *See—*
Ciriack, Gunter; Eckert, Georg; and Hofmann, Horst,3,580,739.
Hogue, Dean M.; and Bender, Carl M. Truck with built-in weighing mechanism and load hold-down device. 3,580,343, Cl. 177-136.
Hohmann, Kurt: *See—*
Mundlos, Eberhard; Mohr, Reinhard; Trapp, Gunther; and Hohmann, Kurt,3,580,900.
Holch, Hermann: *See—*
Gerlach, Fritz; Hauskrecht, Toni; and Holch, Hermann,3,580,764.
Holeman, John M., to General Electric Company. Holographic spatial filters and method of making same. 3,581,280, Cl. 340-146.3
Holland, John P.: *See—*
Wolf, Cecil R.; and Holland, John P.,3,579,809.
Hollinger, Harvey T. Decal dispensing apparatus. 3,580,415, Cl. 221-74.
Hollis, Jack Lyndon; and Shockey, Ray Douglas, to Firestone Tire & Rubber Company, The. Apparatus for building up tread material on a tire carcass. 3,580,781, Cl. 156-397.
Holm, Vernon C. F.: *See—*
Nolan, George J.; and Holm, Vernon C. F.,3,580,969.
Holman, Elmer. Zipper safety fastener. 3,579,749, Cl. 24-205.14
Holophane Company, Inc.: *See—*
Shadwick, Jan, 3,581,082.
Holstein, Siegbert: *See—*
Kraus, Heinz; and Holstein, Siegbert,3,579,836.
Holthenrichs, Philip D.; and Wanger, Robert P., to General Electric Company. Flexible structure orientation control. 3,579,929, Cl. 52-1.
Holzl, Hans, to Kunststoffe Hans Holzl KG. Articulated floor mat. 3,579,704, Cl. 15-215.
Hone, George L.: *See—*
Frey, Dean R.; Hone, George L.; and Ramsey, Edward L., Jr.,3,581,269.
Honeywell G.m.b.H.: *See—*
Merz, Manfred, 3,581,175.
Honeywell Inc.: *See—*
Hurd, Edward T. E., III, 3,581,184.
Neema, Farid J.; and Engelhardt, Robert C., 3,581,285.
Podgorski, Theodore J., 3,581,227.
Rasmussen, Robert F., 3,580,139.
Sampson, Richard L., 3,580,087.
Wallace, Robert H., 3,581,181.
Honeywell Information Systems Inc.: *See—*
Milford, Richard E., 3,581,100.
Palmer, Ansell W., 3,581,064.
Honkala, Harold E.: *See—*
Issott, John W.; Honkala, Harold E.; and Carraher, Delbert V.,3,580,037.
Honsberg, Wolfgang: *See—*
Barney, Arthur Livingston; and Honsberg, Wolfgang,3,580,889.
Hood, John L.; and McGee, Joe H., to Sperry Rand Corporation. Light actuated brushless D.C. motor. 3,581,173, Cl. 318-254.
Hoodwin, Louis S. Apparatus for testing rotary power transmitting components. 3,580,068, Cl. 73-162.
Hooker Chemical Corporation: *See—*
Currey, John E.; Grotheer, Morris P.; and Cook, Edward H., Jr., 3,580,824.
Hoory, Sadok E.; Newman, Stanley F.; and Vincent, Robert E., to Shell Oil Company. Recovery of propylene and propylene oxide by selective separation with plural stage distillation, propylene oxide absorption and subsequent distillation. 3,580,819, Cl. 203-42.
Hoover, Alan W., to International Telephone and Telegraph Corporation. Automatic brightness control. 3,581,098, Cl. 250-213.
Hoover Company, The: *See—*
Allen, Howard L.; and De Graff, Charles D., 3,580,588.
Balzer, Jerry L., 3,579,699.
Horacek, Herbert P., to Garrett Corporation, The. Bistable fluidic amplifier. 3,580,265, Cl. 137-81.5
Horie, Hajime; Hirano, Tadao; and Suzuki, Tokihide, to Fujui Seiren Kako Kabushiki Kaisha. Device for treating textile fabric. 3,580,015, Cl. 68-53.
Horikoshi, Hisashi: *See—*
Iwamoto, Shoji; and Horikoshi, Hisashi,3,581,291.
Hornak, John C.; and Thompson, Douglas F. Football blocking sled. 3,580,574, Cl. 273-55.
Hornbecker, Merton F.: *See—*
Copley, Stephen M.; Giamei, Anthony F.; Hornbecker, Merton F.; and Kear, Bernard H.,3,580,324.
Horvath, Robert M.: *See—*
Kolb, Edwin R.; and Horvath, Robert M.,3,581,302.
Hosea, Joel C.: *See—*
Johnson, John L.; Winsor, Niels K.; Dawson, John M.; Sinclair, Rolf M.; and Hosea, Joel C.,3,580,802.
Hoshi, Hideo; Washi, Masao; and Yoshiki, Hiroshi. Tapping apparatus. 3,579,687, Cl. 10-129.
Hoshino, Fumiro: *See—*
Miya, Bunji; Hoshino, Fumiro; and Matuda, Morio,3,580,930.
Hovious, Thomas C.; and Torkildsen, Robert A., to General Electric Company. Universal automatic sensing and actuating control system for fluid consuming power sources and the like. 3,580,741, Cl. 136-86.
Howitt, Fred; and Taylor, Ian, to Aluminium Laboratories Limited. Production of aluminum zinc magnesium alloy articles. 3,580,747, Cl. 148-12.7
Howlett, Donald L., to Texaco Inc. Sequential approximation pulse height analog-to- digital converter. 3,581,305, Cl. 340-347.
Huber, Hans-Peter: *See—*
Hieber, Fritz; Burger, Erich; and Huber, Hans-Peter,3,580,675.
Huberdeau, Gerard, to French State, represented by the Minister of Armed Forces Ministerial Delegation of Weapons, Technical Delegation of Land Weapons Manufacturing Workshops of Tarbes. Method of producing toroidal bodies from hard, brittles steels. 3,579,806, Cl. 29-463.
Hubin, Allen J., to Minnesota Mining & Manufacturing Company. Elastomeric products of epoxy resins and polyether disecondary amines. 3,580,887, Cl. 260-47.
Hudson, Kenneth C.; and Shashoua, Fred E., to United States of America, Air Force, mesne. Low light level color photography. 3,580,151, Cl. 95-12.20
Huebner, Werner: *See—*
Born, Dieter; Stech, Peter; and Huebner, Werner,3,580,587.
Huffman, Bobbie Dale. Warning device for moving vehicle. 3,581,278, Cl. 340-9062.
Hughes Aircraft Company: *See—*
Hansen, Siegfried, 3,580,687.
Perkins, Carroll R.; Shaffstall, Everett L.; Gundersen, James L.; and Yoder, Robert N., 3,581,226.
Hughes, George T., to Ovitron Corporation. Picture frame mounting construction. 3,579,886, Cl. 40-152.
Hughes, Michael Robert: *See—*
Lombos, Lazlo; and Hughes, Michael Robert,3,580,235.
Hughes, Walter D., to Chevron Research Company. Pressure liquid level indicator. 3,580,263, Cl. 137-2.
Hunerwadel, Jean L.: *See—*
Brinkerhoff, Joris M.; Hunerwadel, Jean L.; and Sellers, Francis B.,3,581,087.
Hunnicutt, Roy. Mixing apparatus. 3,580,550, Cl. 259-107.
Hunt, Lloyd F. Ground protection and detection for high voltage D.C. transmission system. 3,581,152, Cl. 317-18.
Hunter Engineering Company: *See—*
Hunter, Lee; Senften, David A.; and Logan, Edwin W., 3,579,845.
Hunter, Lee; Senften, David A.; and Logan, Edwin W., to Hunter Engineering Company. Dynamic wheel toe and tire pull testing apparatus. 3,579,845, Cl. 33-203.13
Hurd, Edward T. E., III, to Honeywell Inc. Isolator for D.C. signal transmitter. 3,581,184, Cl. 321-2.
Huskey, Joseph E., to Cities Service Company. Hardness tester. 3,580,060, Cl. 73-78.

Husky Manufacturing and Tool Works Ltd.: *See—*
Rees, Herbert, 3,579,740.
Huyghe, Jean: *See—*
de Villiers, Rocco Catoggio; Blachez, Loic; Jegou, Francois; Huyghe, Jean; and Vignet, Paul,3,580,818.
Hybride Turkeys Limited: *See—*
Gunyou, John Christie; and Browning, Stanley Albert Charles, 3,579,955.
Hyde, Thomas J.; and Targonski, Leonard A., to Du Pont de Nemours, E. I., and Company. Copolylactam bowling pin. 3,580,577, Cl. 273-82.
Ibbett Engineering Company Limited: *See—*
Grant, Charles Clark Simpson, 3,580,608.
Icore Industries: *See—*
Shuster, Joseph; and Brown, Richard L., 3,580,379.
Ideal Security Hardware Corporation: *See—*
Waldo, Russell W., 3,580,017.
Ikeda, Masashi; and Inoue, Masayoshi, to Mitsubishi Rayon Co., Ltd. Method of retarding polymerization in the process for the production of methacrylic acid esters. 3,580,947, Cl. 260-486.
Ikuta, Yoshiharu: *See—*
Kurashiki, Hajime; and Ikuta, Yoshiharu,3,580,211.
Iliescu, Liviu; and Dragos, Ion, to Ministerul Industriei Constructillor de Masini. Method and stereoscopic optical apparatus for determining the roughness of the surfaces of machined parts. 3,580,682, Cl. 356-168.
Imhof, Herman A., to USM Corporation. Automatic shoe machinery and operation of the same. 3,579,694, Cl. 12-17.
Imperial Chemical Industries Limited: *See—*
Anderton, Kenneth, 3,580,946.
Brown, Ivor James Stewart; Clarkson, Richard; Crossley, Neville Stanton; and McLoughlin, Bernard Joseph, 3,580,905.
Corry, Alfred Reginald; Guest, Dorothy Joyce; and Williamson, William Ian, 3,580,877.
Leigh, Thomas, 3,580,923.
Imprimerie Chaix-Desfosses-Neogravure: *See—*
Lannegrace, Jean-Paul, 3,580,827.
Improved Machinery Inc.: *See—*
Vore, Herbert G.; and Bardsley, Donald E., 3,579,726.
Inamoto, Toshiharu: *See—*
Suzuki, Yoshiaki; and Inamoto, Toshiharu,3,581,288.
Indian Head Inc.: *See—*
Kieffer, William H., 3,579,764.
Industrial Nucleonics Corporation: *See—*
Spitz, David A., 3,581,199.
Industrie A. Zanussi S.p.A.: *See—*
Mazza, Lamberto, 3,580,014.
Ingraham, Robert C.; and Ramsey, Hubert J., to Sylvania Electric Products, Inc. Method of producing semiconductor devices. 3,579,816, Cl. 29-583.
Inland Steel Company: *See—*
Halley, James W., 3,581,040.
Inoue, Hideaki: *See—*
Ohi, Kunio; Inoue, Hideaki; Nakayama, Toshio; and Ishii, Sosuke,3,581,245.
Inoue, Isaburo: *See—*
Iwama, Masakuni; Inoue, Isaburo; and Hanzawa, Teruo,3,580,721.
Inoue, Masayoshi: *See—*
Ikeda, Masashi; and Inoue, Masayoshi,3,580,947.
Inouye, Shingo; and Saul, George, to United States of America, Air Force. Immersion thermocouple for atmospheric and vacuum environments. 3,580,744, Cl. 136-234.
Institutul de Cercetari Tehnologice Pentru Constructii de Masini: *See—*
Luca, Ioan, 3,580,026.
Institute of Gas Technology, The: *See—*
Dolan, Jose P., 3,580,003.
Institutul de Cercetari Stiintifice Pentru Protectia Muncii: *See—*
Minetos, Nicolae, 3,580,307.
Integral Process Systems, Inc.: *See—*
Wagner, Richard C., 3,580,000.
International Business Machines Corporation: *See—*
Alexander, David C., 3,581,219.
Beausoleil, William F., 3,581,286.
Blakeslee, A Eugene; Gukelberger, Thomas F., Jr.; and Lyons, Vincent J., 3,580,732.
Dill, Frederick H., Jr., 3,579,814.
Lipschutz, Lewis D., 3,580,460.
Pliskin, William A.; and Taylor, James E., 3,580,066.
International Dynetics Corporation: *See—*
Long, Joseph F., 3,580,166.
International Paper Company: *See—*
Lee, Charles A.; and Furbeck, Warren R., 3,580,784.
International Standard Electric Corporation: *See—*
Grente, Lucien Ernest; and Leveque, Roger, 3,579,789.
Harland, Geoffrey; and Ronayne, John P., 3,581,018.
Muller, Jean Jacques, 3,581,013.
Sharpe, John Thomas Lawrence, 3,581,121.
Vazquez, Charles, 3,581,256.
International Telephone and Telegraph Corporation: *See—*
Hoover, Alan W., 3,581,098.
Pfander, Hans; Schilling, Harald; and Schwabe, Gerhard, 3,581,164.
Ribner, Morris; and Hestad, Alfred M., 3,581,020.
Irako, Koichi: *See—*
Onishi, Akira; Anzai, Shiro; Irako, Koichi; Fujio, Ryota; Hayakawa, Yoshihiro; and Miyamoto, Shoji,3,580,895.
Isaacs, Wayne R. Frequency to direct current converter circuit. 3,581,217, Cl. 328-140.
Isaksen, Robert A.; and De Shay, Robert V., to Monsanto Company. Coating composition of a mixture of a vinyl ester of an aliphatic acid-carboxylic acid copolymer and a terpolymer of a vinyl ester of an aliphatic acid, a carboxylic acid ester and a carboxylic acid. 3,580,972, Cl. 260-836.
Ishihara, Frank Y., 50% to Tall, Leonard H. Opener for a film pack. 3,579,801, Cl. 29-427.
Ishihara, Masayoshi: *See—*
Tanaka, Hiroshi; and Ishihara, Masayoshi,3,581,149.
Ishii, Sosuke: *See—*
Ohi, Kunio; Inoue, Hideaki; Nakayama, Toshio; and Ishii, Sosuke,3,581,245.
Isogai, Nobuo: *See—*
Kuraishi, Michio; Asano, Setunobu; and Isogai, Nobuo,3,580,968.
Issott, John W.; Honkala, Harold E.; and Carraher, Delbert V., to Universal Oil Products Company, mesne. Tube extrusion apparatus including separable arrested mandrel tip tube cutoff. 3,580,037, Cl. 72-255.
Itek Corporation: *See—*
Watson, John Thaxter; and Robinson, Kenneth, 3,580,150.
Ito, Teruhiko; Mitsui, Naoshi; Maeda, Seiichiro; and Kato, Takeshi, to Seitetsu Kagaku Co., Ltd. Process for producing high molecular weight polymers of alkylene oxides. 3,580,866, Cl. 260-2.
Itoh, Yoshishige; Kawamura, Masatada; and Kasai, Yoshio, to Fuji Motors Corporation. Method of destroying ferroconcrete, rock or the like. 3,580,637, Cl. 299-14.
Ivackovic, Nikola; and Urosevic, Milija, to Cer Preduzece Termo-Tehnickih Uredajaja I Montaza. Vertical grain drying device. 3,579,852, Cl. 34-167.
Iverson, Peter B., to Postmark Corporation. Advertising display support. 3,579,885, Cl. 40-145.
Iwama, Masakuni; Inoue, Isaburo; and Hanzawa, Teruo, to Konishiroku Photo Industry Co., Ltd. Light-sensitive color-photographic material. 3,580,721, Cl. 96-100.
Iwamiya, Masao: *See—*
Shimemura, Etsujiro; and Iwamiya, Masao,3,581,238.
Iwamoto, Shoji; and Horikoshi, Hisashi, to Hitachi, Ltd. Memory control system in multi-processing system. 3,581,291, Cl. 340-172.5
Iytaka, Tateshi: *See—*
Sato, Shui; Sakazume, Kaiichiro; and Iytaka, Tateshi,3,580,724.
J-B-T Instruments, Inc.: *See—*
Plumb, Frank J., 3,581,033.
Jachlewski, Arthur F.: *See—*
Demler, Walter R.; and Jachlewski, Arthur F.,3,580,919.
Jackson, Isaac S., to National Catheter Corporation. Conductive line tube. 3,580,983, Cl. 174-47.
Jacob, Friedrich: *See—*
Schwenk, Kurt; Gallasch, Ernst; Hablitzel, Hermann; and Jacob, Friedrich,3,579,727.
James, Herbert I., to ESB Incorporated. Zinc electrode containing lead sulfide to reduce gassing at the zinc electrode in heat sterilized silver zinc alkaline battery. 3,580,740, Cl. 136-30.
Jankowitz, Gerald: *See—*
Pearsall, Denton; and Jankowitz, Gerald,3,581,092.
Jantzen, Robert J., to Ocean Science and Engineering, Inc. Dredging apparatus with surge compensating means. 3,579,872, Cl. 37-66.
Japan Aircraft Manufacturing Co., Ltd.: *See—*
Wada, Misao; and Soda, Kiyoshi, 3,580,530.
Japan Exlan Company Limited: *See—*
Nakanome, Iyohiko; Takeya, Kenji; Suzuki, Hiroshi; and Kitagawa, Yasuhiro, 3,580,878.
Japan Gas-Chemical Company, Inc.: *See—*
Kuraishi, Michio; Asano, Setunobu; and Isogai, Nobuo, 3,580,968.
Jarret, Jacques; and Jarret, Jean, to Societe d'Exploitation des Ressorts Auto- Amortisseus Jarret. Improvements in resilient devices. 3,580,560, Cl. 267-153.
Jarret, Jean: *See—*
Jarret, Jacques; and Jarret, Jean,3,580,560.
Jeddeloh Bros. Sweed Mills, Inc.: *See—*
Larson, Charles L., 3,580,778.
Jefferson Robert T.: *See—*
Salyer, Ival O.; Jefferson Robert T.; and Ross, William D.,3,580,843.
Jegou, Francois: *See—*
de Villiers, Rocco Catoggio; Blachez, Loic; Jegou, Francois; Huyghe, Jean; and Vignet, Paul,3,580,818.
Jennings, Charles M.: *See—*
Tidball, Robert A.; King, William M.; Bosley, Dewey R.; and Jennings, Charles M.,3,580,816.
Jepsen, Robert L., to Varian Associates. Detection of by gas ionization method and apparatus providing decreased vacuum recovery time. 3,581,195, Cl. 324-33.
Jewett, Lawrence A.; and Jewett, Walter C. Vehicle luggage carrier. 3,580,439, Cl. 224-42.1
Jewett, Walter C.: *See—*
Jewett, Lawrence A.; and Jewett, Walter C.,3,580,439.
Jisa, Miloslav; Zmatlik, Josef; Mohelnicky, Josef; and Milichovsky, Bohumil, to Stantni Vyzkumny Ustav Textilni. Partly woven and partly knitted fabric and apparatus for making the same. 3,580,295, Cl. 139-383.

Johansson, Bengt: *See—*
Burmeister, Fred; Enkvist, Ernst; Johansson, Bengt; and Kostilainen, Valter,3,580,204.

Johnson, Alfred D., to Sylvania Electric Products, Inc. Cathode ray tube having an annular shaped rear window. 3,581,134, Cl. 313-64.

Johnson, Clark E., Jr. Trigonometric encoder. 3,581,306, Cl. 340-347.

Johnson, Evar C. Toilet flushing attachment. 3,579,664, Cl. 4-250.

Johnson, Gilbert A., to Marquette Electronics, Inc. Means and method for subtracting D.C. noise from electrocardiographic signals. 3,580,243, Cl. 128-2.06

Johnson, Janet M.: *See—*
Wray, Dennis; and Johnson, Janet M.,3,580,701.

Johnson, John L.; Winsor, Niels K.; Dawson, John M.; Sinclair, Rolf M.; and Hosea, Joel C., to United States of America, Atomic Energy Commission. Device for determining the shape of magnetic surfaces in toroidal configurations containing plasma. 3,580,802, Cl. 176-1.

Johnson, Joseph E.: *See—*
Simon, Alan J.; Johnson, Joseph E.; and O'Keeffe, Trence W.,3,580,749.

Johnson, Kenneth R.: *See—*
Dodgen, John N.; and Johnson, Kenneth R.,3,580,599.

Johnson, Theodore C. Hose straightening device. 3,579,786, Cl. 29-200.

Jonckheere, Lucien Julienne Arthur. Clips useful in the medical field. 3,579,751, Cl. 24-252.

Jones, Charles E., to Sabin Machine Co. Vibrating machine. 3,579,919, Cl. 51-163.

Jones, Gordon H., to Giddings & Lewis, Inc. Clamping apparatus for a machine tool. 3,580,135, Cl. 90-11.

Jones, John Paul, Jr., to Navcor, Inc., a division of KDI Corporation. Coded punch electromagnetic interposer assembly. 3,580,495, Cl. 234-115.

Jones, Johnny W., to Borg-Warner Corporation. Multi-phase motor control system with over- current and under-current protection. 3,581,179, Cl. 318-452.

Jonsson, Lars-Erik, to Alfa-Laval AB. Method and apparatus for detecting sludge level in a centrifuge. 3,580,493, Cl. 233-19.

Jordan, Grant H., to American Greetings Corporation. Device for applying a band of thermosetting material onto a label and for sealing the label onto an article. 3,580,791, Cl. 156-540.

Jorgensen, Anker E.; and Oxley, Gerald K., to TRW Inc. Telescoping section in a steering column. 3,580,101, Cl. 74-493.

Joslyn Mfg. and Supply Co.: *See—*
Misare, Donald O., 3,580,986.

Joy, Ivan L. Wheel trip. 3,581,083, Cl. 246-246.

Joyce, John. Control circuitry to prevent use of a secondary circuit without static electricity grounds. 3,581,153, Cl. 317-18.

Kabushiki Kaisha Ricoh: *See—*
Ando, Sadanao, 3,580,672.
Fukushima, Yoshio, 3,580,153.
Fukushima, Yoshio, 3,580,659.
Hashimoto, Hideo, 3,580,567.

Kabushiki Kaisha Suwa Seikosha: *See—*
Yamamura, Katsumi; Miyasaka, Tsugumitsu; Hayashi, Shinichi; Yamamoto, Masao; and Matsubara, Yukio, 3,580,820.

Kach, Alfred, to Patelhold Patentverwertungs-&-Elektro-Holding AG. Linearly polarized microwave feed assembly for parabolic antennas and the like. 3,581,311, Cl. 343-781.

Kafka, Wilhelm, to Siemens Aktiengesellschaft. Switching device for disconnecting cables. 3,581,113, Cl. 307-245.

Kaiser Aluminum & Chemical Corporation: *See—*
Peterson, John R., 3,580,835.

Kakinuma, Saburo: *See—*
Abe, Katsuro; Kakinuma, Saburo; and Uno, Masaaki,3,579,986.

Kalle Aktiengesellschaft: *See—*
Kegelmann, Gunter; Gebler, Horst; and Seifried, Walter, 3,580,798.
Maar, Herbert; Steppan, Hartmut; Messwarb, Gunter; and Luders, Walter, 3,580,888.

Kalman, Mario, to Goodway Inc. Method of printing and folding a mailing piece. 3,579,947, Cl. 53-23.

Kaltenbach, Roger Max. Apparatus for obtaining uniform droplets. 3,579,721, Cl. 18-2.7

Kaltenegger, Benno. Vibratory road roller. 3,580,147, Cl. 94-50.

Kaman Sciences Corporation: *See—*
Carr, Barney J., 3,581,093.

Kamborian, Jacob S.: *See—*
Robinson, Charles A., 3,579,693.

Kamborian, Jacob S. Toe lasting machine. 3,579,690, Cl. 12-12.4

Kamiya, Toshihiro: *See—*
Asada, Takeo; and Kamiya, Toshihiro,3,580,121.

Kampe, Wolfgang: *See—*
Thiel, Max; Kampe, Wolfgang; Stach, Kurt; Schaumann, Wolfgang; and Ribbentrop, Annemarie,3,580,910.

Kaneko, Seiya: *See—*
Yoshimoto, Toshio; Narumiya, Tsuneaki; Kaneko, Seiya; Yoshii, Hiroshi; and Takamatsu, Tetsuya,3,580,897.

Kaneno, Saburo; Yamaguchi, Takeshi; and Yoshioka, Shunichi, to Sumitomo Electric Industries, Ltd. Piezoelectric wheel-axle detector. 3,581,084, Cl. 246-249.

Kang, Katherine K. H.; and Kang, Young Ok. Skewer meat device. 3,579,713, Cl. 17-1.

Kang, Young Ok: *See—*
Kang, Katherine K. H.; and Kang, Young Ok,3,579,713.

Kanzaki, Fumiaki; Kozakura, Yoshio; Akahide, Kozo; and Suzuki, Tamotu, to Kawasaki Steel Corporation, and Nippon Kokan Kabushikikaisha. Method of one-side arc welding and backing material therefor. 3,581,039, Cl. 219-73.

Kao Soap Co., Ltd.: *See—*
Miya, Bunji; Hoshino, Fumiro; and Matuda, Morio, 3,580,930.

Kappel, Thomas Inc.: *See—*
Wagner, Millard C., 3,580,606.

Karasman, Paul G. Burglar alarm. 3,580,215, Cl. 116-87.

Karlinsky, Stanislav Evgenievich: *See—*
Khimich, Georgy Lukich; Niskovskikh, Vitaly Maximovich; Varaxin, Alexei Ivanovich; Gelfenbein, Evgeny Jukhimovich; Bykov, Leonid Alexandrovich; Litvinov, Anatoly Ivanovich; and Karlinsky, Stanislav Evgenievich,3,580,327.

Kasahara, Shigekazu; Takahashi, Yuji; Suzuki, Takashi; Umeda, Shinichi; Adachi, Kazuo; and Fukuda, Yasuo, to Tekkosha Co., Ltd. Method of chemical grout processing. 3,580,883, Cl. 260-41.

Kasai, Yoshio: *See—*
Itoh, Yoshishige; Kawamura, Masatada; and Kasai, Yoshio,3,580,637.

Kashahara, Toshio; and Numao, Mitsuru. Method of jointing sheaths of aluminum sheathed cables. 3,580,756, Cl. 156-49.

Kast, Howard Berdolt, to General Electric Company. Method of forming interference fits by heat treatment. 3,579,805, Cl. 29-447.

Kastner, Arnold. Cigarette tube packaging apparatus. 3,580,433, Cl. 222-440.

Kato, Takeshi: *See—*
Ito, Teruhiko; Mitsui, Naoshi; Maeda, Seiichiro; and Kato, Takeshi,3,580,866.

Kawamura, Masatada: *See—*
Itoh, Yoshishige; Kawamura, Masatada; and Kasai, Yoshio,3,580,637.

Kawasaki Steel Corporation: *See—*
Kanzaki, Fumiaki; Kozakura, Yoshio; Akahide, Kozo; and Suzuki, Tamotu, 3,581,039.

Kaydon Technical Enterprises Ltd.: *See—*
Fraser, Colin Kenneth Glenn; Favreau, Ernest; and March, Willis Paul, 3,580,546.

KDI Corporation: *See—*
Jones, John Paul, Jr., 3,580,495.

Kear, Bernard H.: *See—*
Copley, Stephen M.; Giamei, Anthony F.; Hornbecker, Merton F.; and Kear, Bernard H.,3,580,324.

Kearney & Trecker Corporation: *See—*
Sedgwick, Robert K., 3,580,834.

Kearns, Robert W. Windshield wiper control device. 3,581,178, Cl. 318-443.

Kedman Company: *See—*
Davis, Frank J.; and Edwards, George Zahnor, 3,579,638.

Keen, Ian Montgomery; Craig, Peter James; and Bradshaw, Christopher Patrick Cadman, to British Petroleum Company Limited, The. Dehydrogenation catalyst. 3,580,960, Cl. 260-683.3

Kegelmann, Gunter; Gebler, Horst; and Seifried, Walter, to Kalle Aktiengesellschaft. Biaxially stretched trioxane copolymer film and process for the preparation thereof. 3,580,798, Cl. 161-165.

Keil, Karl-Heinz: *See—*
Heid, Christian; and Keil, Karl-Heinz,3,580,851.

Keiper, Phillip C. Elevator systems. 3,580,360, Cl. 187-29.

Keithley, Harry E.: *See—*
Helrigel, Robert A.; Brownell, James R.; Ward, Roderick K.; and Keithley, Harry E.,3,580,558.

Kellner, Hans-Jurgen: *See—*
Hennig, Fridolin; Kellner, Hans-Jurgen; Potz, Klaus; and Gotze, Christian,3,580,443.

Kelly, Donald A. Uniflow stirling engine and frictional heating system. 3,579,980, Cl. 60-42.

Kelly, Franklin G., to TRW Inc. Digital to analog converter. 3,581,303, Cl. 340-347.

Kelsey-Hayes Company: *See—*
Gollwitzer, George E., 3,580,043.
Hayes, Edward J.; and Crick, Stephen E., 3,579,783.
Taccone, Russell W., 3,580,329.

Keltz, Lawrence W.; and Marek, Charles, to Chicago Roller Skate Company, The. Tap holder. 3,579,688, Cl. 10-134.

Kemeny, George A.; and Wolf, Charles B., to Westinghouse Electric Corporation. Quick-change field coil assembly for use in an electrode having a fluid-cooled arcing surface. 3,580,977, Cl. 13-18.

Kennedy, Daniel M., Jr.; and Zellner, Carl Naeher, to Celanese Corporation. Polyoxymethylene-formal-containing- polyester block polymer. 3,580,973, Cl. 260-860.

Kennedy, Garth P.; and Nelson, William E., to Corken Pump Company. Evacuation system for pipeline discharging pump. 3,580,420, Cl. 222-1.

Kenney, James E.; and Ashenfelter, Richard J., to Gerity-Schultz Corporation. Fragmentation explosive device. 3,580,175, Cl. 102-67.

Kent-Moore Corporation: *See—*
White, Richard B., 3,580,055.

Kerr, William J., to Chicago Lock Co. Keeper lock for a slide fastener. 3,580,016, Cl. 70-68.

Kerrigan, James Edward: *See—*
Gerber, Reinhold; Kerrigan, James Edward; and Hawley, Harry Ray,3,579,737.

Kershaw, John Knox, to Marmon Groups, Inc., The, mesne. Railway ballast working apparatus. 3,579,873, Cl. 37-105.

Kessler, Rene: *See—*
Apotheloz, Robert; Bigler, Hans-Ulrich; and Kessler, Rene,3,580,174.
Key, John W. Printing screen cleaner. 3,580,261, Cl. 134-104.
Keyes Fibre Company: *See—*
Lowery, Louie R., 3,579,951.
Khimich, Georgy Lukich; Niskovskikh, Vitaly Maximovich; Varaxin, Alexei Ivanovich; Gelfenbein, Evgeny Jukhimovich; Bykov, Leonid Alexandrovich; Litvinov, Anatoly Ivanovich; and Karlinsky, Stanislav Evgenievich. Continuous casting mold. 3,580,327, Cl. 164-280.
Kidd, Thomas L., Jr.; and McClain, Albert D., Jr., to General Electric Company. Non-flammable, thin, integrally illuminated control panel overlay. 3,580,755, Cl. 156-3.
Kidde, Walter & Company, Inc.: *See—*
Hansen, Arne, 3,580,274.
Kidder, Ephraim Henry. Fish impaling and grappling implement. 3,579,894, Cl. 43-6.
Kieffer, William H., to Indian Head Inc. Process for producing textured yarns. 3,579,764, Cl. 28-72.11
Kiehl, Arthur H. Conveyor article transfer apparatus. 3,580,377, Cl. 198-20.
Kilner, George E., to Filper Corporation. Apparatus and method for levelling drupe halves and the like. 3,580,381, Cl. 198-33.
Kimberly-Clark Corporation: *See—*
Bernardin, Leo J., 3,580,253.
King, Arthur S. Treatment system with cooling means. 3,580,836, Cl. 204-308.
King, James D.: *See—*
Damewood, Glenn; Sparks, Cecil R.; and King, James D.,3,581,077.
King, Jonathan W., Jr., to Georgia-Pacific Corporation. Conveyor article support apparatus. 3,580,387, Cl. 198-178.
King of Prussia Research and Development Corporation: *See—*
Kron, Harold O.; Liu, John K.; and Behnke, Edward, 3,580,371.
King, Robert H.: *See—*
Thelen, Edmund J.; and King, Robert H.,3,580,466.
King, William M.: *See—*
Tidball, Robert A.; King, William M.; Bosley, Dewey R.; and Jennings, Charles M.,3,580,816.
King-Seeley Thermos Co.: *See—*
Hoenisch, Walter H., 3,580,416.
Zumstein, Fred R., 3,580,762.
Kirk, Thomas E.; and Stenklyft, Gerald H., to General Motors Corporation. Overvoltage protection circuit for a generator regulator system. 3,581,150, Cl. 317-16.
Kirkby, Donald, to BBA Group Limited. Dynamic braking of induction motors. 3,581,168, Cl. 318-211.
Kishi, Kanesuke; Tsuchiya, Noboru; and Shimura, Kazuo, to Sony Corporation. Unidirectional microphone. 3,581,012, Cl. 179-1.
Kitagawa, Yasuhiro: *See—*
Nakanome, Iyohiko; Takeya, Kenji; Suzuki, Hiroshi; and Kitagawa, Yasuhiro,3,580,878.
Kitano, Yasushi; and Fujita, Kozo, to Matsushita Electric Industrial Co., Ltd. Automatic speed control apparatus for automotive vehicles. 3,580,355, Cl. 180-105.
Klawunn, Herbert G.; and Herr, John Addison, to Singer Company, The. Method and apparatus for bar sealing of girdle panels. 3,580,780, Cl. 156-380.
Kleban, Michael P.: *See—*
Spadoni, Frank G., Jr.; and Kleban, Michael P.,3,580,297.
Klebetechnik GmbH: *See—*
Pollmeier, Heinz; and Witthuhn, Johann, 3,580,790.
Klein, Kurt: *See—*
Fratzscher, Helmut; Klein, Kurt; Maluzi, Joachim; Hansen, Peter; and Schmitz, Werner,3,580,844.
Klein, Kurt; Lumbeck, Gerd; and Maluzi, Joachim, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for hindering the agglomeration or reagglomeration of ground finely divided powdered substances. 3,580,519, Cl. 241-22.
Klein Schanzlin & Becker A. G.: *See—*
Born, Dieter; Stech, Peter; and Huebner, Werner, 3,580,587.
Klein, Wilhelm: *See—*
Fichtner, Rudi; Ober, Horgern; and Klein, Wilhelm,3,579,691.
Klempner, George R.; and Rosenberg, Sam, to Foundry Suppliers Inc. Engine block stripping apparatus. 3,579,784, Cl. 29-200.
Klensch, Richard J., to RCA Corporation. Constant sized halftone dot image generator. 3,580,995, Cl. 178-6.7
Klevanov, Fedor Grigorievich: *See—*
Bondarenko, Alexandr Andreevich; and Klevanov, Fedor Grigorievich,3,580,090.
Klimsch & Co.: *See—*
Schunck, Kurt; and Baunach, Waldemar, 3,580,674.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Deussner, Herbert; and Langmaack, Jurgen, 3,579,850.
Klose, Karl W.: *See—*
Teed, Richard K.; and Klose, Karl W.,3,580,198.
Knaggs, Marvin G.: *See—*
Pieszak, Franklin B.; and Knaggs, Marvin G.,3,580,467.
Knapsack Aktiengesellschaft: *See—*
Baader, Herbert; and Sennewald, Kurt, 3,580,958.
Knitter, Heinz; and Veszelik, Josef, to Bunker-Ramo Corporation, The. Contact unit having contact protective means. 3,581,271, Cl. 339-176.
Knizia, Klaus, to L. & C. Steinmuller G.m.b.H. Method and apparatus for operation of a positively driven steam generator with rolled overlap and gas-tight welded vaporizer walls. 3,580,223, Cl. 122-1.
Knutson, William J., to Motorola, Inc. Frequency modulated crystal controlled oscillator operable at a plurality of temperature compensated center frequencies. 3,581,239, Cl. 332-18.
Knyazev, Vladimir Fedorovich: *See—*
Kononov, Mikhail Ivanovich; Krasheninnikov, Evgeny Anatolievich; Knyazev, Vladimir Fedorovich; Vasiliev, Evgeny Nikolaevich; Nasonov, Petr Yakovleivich; and Timofeev, Evgeny Petrovich,3,580,717.
Kobald, Walter: *See—*
Bosch, Paul; and Kobald, Walter,3,579,979.
Kobayashi, Toshio, to Fujitsu Limied. Frame synchronization system for synchronizing the frame of a digital signal transmission. 3,581,010, Cl. 178-69.5
Kobayashi, Yutaka: *See—*
Watanabe, Ryozi; and Kobayashi, Yutaka,3,581,188.
Kober, Ehrenfreid H.: *See—*
Churchill, John W.; Kober, Ehrenfreid H.; Scott, Peter H.; and Smith, Curtis P.,3,580,951.
Koboldt, Melvin A., to Container Corporation of America. Easy opening arrangement for reclosable can. 3,580,481, Cl. 229-51.
Koch, Peter, to United States of America, Agriculture. Process of making laminated wood product utilizing modulus of elasticity measurement. 3,580,760, Cl. 156-64.
Kocherov, Anatoly Vasilievich: *See—*
Beresnev, Boris Ivanovich; Bulychev, Dmitry Konstantinovich; Martynov, Evgeny Dmitrievich; Ryabinin, Jury Nikolaevich; Rodionov, Kuzma Petrovich; Maltsev, Mikhail Vasilievich; Britnev, Georgy Pavlovich; and Kocherov, Anatoly Vasilievich,3,580,019.
Kocks, Friedrich, Firma: *See—*
Bindernagel, Ali; Kost, Erwin; and Staat, Karl-Hans, 3,580,020.
Koehler-Dayton, Inc.: *See—*
Russo, Ronald D., 3,579,651.
Koehring Company: *See—*
Brown, Gaylord W., 3,579,723.
Koenig, Robert P.: *See—*
Sherman, Russell G.; and Koenig, Robert P.,3,580,272.
Koerv, Peter: *See—*
Hermes, Heinz; Thieme, Klaus-Dietrich; Gatermann, Willi; Koerv, Peter; and Mehnert, Walter,3,581,185.
Koestel, Alfred, to United States of America, Air Force. Boiler inlet plug insert with heat dam. 3,580,227, Cl. 122-406.
Kogel, Wilhelm Georg, to Aktiebolaget Electrolux. Apparatus for defrosting cooling units of absorbtion refrigeration systems. 3,580,004, Cl. 62-148.
Koitabashi, Takeo: *See—*
Sakamoto, Kenro; Takahashi, Takao; Koitabashi, Takeo; and Fujiwara, Mitsuto,3,580,722.
Kolb, Edwin R.; and Horvath, Robert M., to Harris-Intertype Corporation. Apparatus and method for providing graphical configurations by sequentially directing a radiant energy beam to present image positions. 3,581,302, Cl. 340-324.
Koll, Laurel A.; and Crook, Walter, Jr., to Diamondhead Properties, Inc., mesne. Method and apparatus for moving objects. 3,579,672, Cl. 5-81.
Komen, Stanley. Continuous envelope. 3,580,488, Cl. 229-69.
Kondel, George C.: *See—*
Nejame, Samuel, Jr.; Kondel, George C.; and De Santis, Italo J.,3,580,301.
Konishiroku Photo Industry Co., Ltd.: *See—*
Iwama, Masakuni; Inoue, Isaburo; and Hanzawa, Teruo, 3,580,721.
Sakamoto, Kenro; Takahashi, Takao; Koitabashi, Takeo; and Fujiwara, Mitsuto, 3,580,722.
Sato, Shui; Sakazume, Kaiichiro; and Sakamoto, Eiichi, 3,580,723.
Sato, Shui; Sakazume, Kaiichiro; and Iytaka, Tateshi, 3,580,724.
Kononov, Mikhail Ivanovich; Krasheninnikov, Evgeny Anatolievich; Knyazev, Vladimir Fedorovich; Vasiliev, Evgeny Nikolaevich; Nasonov, Petr Yakovleivich; and Timofeev, Evgeny Petrovich. Method of obtaining a spongy metal ingot in a shaft furnace. 3,580,717, Cl. 75-37.
Kooi, Else; and Van Der Meer, Aant Bouwe Daniel, to U.S. Philips Corporation, mesne. Semiconductor device. 3,580,745, Cl. 148-1.5
Kopf, Joseph E.: *See—*
Lamp, Richard W.; Kopf, Joseph E.; Dravis, Donald P.; and Cuneo, Robert A.,3,580,981.
Koppers Company: *See—*
Tucker, Linwood G., 3,580,815.
Koppers Company, Inc.: *See—*
Hinchliffe, Basil W., 3,580,813.
Kopsch, Paul J.; Turcus, Daniel, Jr.; and Ward, Donald F. Externally lubricated projectile and method of making same. 3,580,178, Cl. 102-92.2
Korablev, Lev Nickolaevich, to Fizichesky Institute IM. P. N. Lebedeva. Electronic pulse counter with bistable switching elements. 3,581,147, Cl. 315-84.5
Korbilas, Christ P.; and Smith, Raymond W., to Astro Controls, Inc., mesne. Multi-purpose liquid transfer valve. 3,580,276, Cl. 137-517.

Korshunov, Mikhail Alexeevich: *See—*
Bodnarjuk, Frizian Nikolaevich; and Korshunov, Mikhail Alexeevich,3,580,918.

Kosaka, Yoshiteru, to Victor Company of Japan, Limited. Signal editing system for magnetic recording and reproducing apparatus. 3,580,994, Cl. 178-6.6

Koshikawa, Tsuneji: *See—*
Miura, Tanetoshi; Koshikawa, Tsuneji; Nakano, Yasuaki; and Nakayama, Takeshi,3,581,192.

Kost, Erwin: *See—*
Bindernagel, Ali; Kost, Erwin; and Staat, Karl-Hans,3,580,020.

Kostilainen, Valter: *See—*
Burmeister, Fred; Enkvist, Ernst; Johansson, Bengt; and Kostilainen, Valter,3,580,204.

Kotter, Helmut, to Stiegelmeyer, Joh., & Co. G.m.b.H. Adjustable bed. 3,579,671, Cl. 5-62.

Kowalski, Robert J. Archery bow sight. 3,579,839, Cl. 33-46.

Kozakura, Yoshio: *See—*
Kanzaki, Fumiaki; Kozakura, Yoshio; Akahide, Kozo; and Suzuki, Tamotu,3,581,039.

Kraft, Karl-Josef: *See—*
Schmidt, Wolfgang; Kraft, Karl-Josef; and Kurth, Willi,3,579,722.

Kraft, Melvin G.: *See—*
Yopp, Robert S.; and Kraft, Melvin G.,3,581,272.

Krahulec, Fred, to Motorola, Inc. Rotationally responsive device. 3,580,177, Cl. 102-79.

Kramer, Harold A., to United States of America, Agriculture. Pneumatic probe sampler. 3,580,084, Cl. 73-421.

Krasheninnikov, Evgeny Anatolievich: *See—*
Kononov, Mikhail Ivanovich; Krasheninnikov, Evgeny Anatolievich; Knyazev, Vladimir Fedorovich; Vasiliev, Evgeny Nikolaevich; Nasonov, Petr Yakovleivich; and Timofeev, Evgeny Petrovich,3,580,717.

Kraus, Charles E., to Excelermatic, Inc. Motion transmission drive. 3,580,094, Cl. 74-242.11

Kraus, Heinz; and Holstein, Siegbert, to Heidenhain, Johannes, Dr. Arrangement for measuring of lengths. 3,579,836, Cl. 33-1.

Krause, Gerhard, to Fernseh GmbH. Automatic time correction circuit for color TV signals. 3,580,991, Cl. 178-5.4

Kravchenko, Svyatoslav Anatolievich; and Kulemin, Alexei Alexeevich. Phase-setting device. 3,581,201, Cl. 324-83.

Krein, Reuben J., to Stitchcraft Corporation. Article holding apparatus. 3,580,561, Cl. 267-81.

Kretzmer, Ernest R., to Bell Telephone Laboratories, Incorporated. Adaptive integrator for digital signals. 3,581,111, Cl. 307-236.

Kroll, Wolfram R., to Esso Research and Engineering Company. Preparation of dialkyl Group IIIa metal- diacylmethane. 3,580,938, Cl. 260-448.

Kron, Harold O.; Liu, John K.; and Behnke, Edward, to King of Prussia Research and Development Corporation. Self-synchronizing clutch. 3,580,371, Cl. 192-18.

Krueger, Robert H.: *See—*
Albertson, Clarence E.; and Krueger, Robert H.,3,580,759.

Kruger, Max: *See—*
Kusters, Eduard; and Kruger, Max,3,580,447.

Kruse, Wilbert A.: *See—*
Guyer, Reynolds W., Jr.; and Kruse, Wilbert A.,3,580,234.

Kuffer, Clarence O.; and Mc Avoy, Thomas. Valve Corporation of America Aerosol valve tip and stem assembly and method of assembling same. 3,580,431, Cl. 222-42.1

Kugler, Emanuel. Plastic bag with integral handle. 3,580,486, Cl. 229-54.

Kuhn, Henry S. Disposable urinal. 3,579,653, Cl. 4-110.

Kuhn, Henry S. Disposable self inflatable bed pan. 3,579,654, Cl. 4-113.

Kuhn, Henry S. Writing guide for training purposes and use by the blind. 3,579,867, Cl. 35-38.

Kujawa, Edmund J.: *See—*
Furstenburg, Alvin J.; and Kujawa, Edmund J.,3,579,799.

Kukla, Stanley. Method of forming decorative three dimensional effect designs and coatings. 3,580,768, Cl. 156-156.

Kulemin, Alexei Alexeevich: *See—*
Kravchenko, Svyatoslav Anatolievich; and Kulemin, Alexei Alexeevich,3,581,201.

Kumpf, Hermann, to Siemens Aktiengesellschaft. Steam generating assembly for use in the interior of a pressure vessel of a pressurized water nuclear reactor. 3,580,807, Cl. 176-55.

Kunststoffe Hans Holzl KG: *See—*
Holzl, Hans, 3,579,704.

Kunzmann, Konrad: *See—*
Perthen, Johannes; Gerighausen, Werner; Kunzmann, Konrad; and Dreyer, Heinz,3,580,062.

Kupersmit, Julius B. Combination cleat and clip means for assembling collapsible containers. 3,580,618, Cl. 287-20.924

Kupsky, George A., to Burroughs Corporation. Method of making display devices. 3,580,654, Cl. 316-20.

Kuraishi, Michio; Asano, Setunobu; and Isogai, Nobuo, to Japan Gas-Chemical Company, Inc. Process for preparing N,N-dialkylacylamides. 3,580,968, Cl. 260-561.

Kurashiki, Hajime; and Ikuta, Yoshiharu, to Mitsui Shipbuilding and Engineering Co., Ltd. Method of shaft alignment of a main engine shaft in shipbuilding. 3,580,211, Cl. 115-0.5

Kurisu, Albert G., to United States of America, Navy. Method of making conformal blocks for evaporatively cooling circuit assemblies. 3,579,821, Cl. 29-627.

Kurono, Hirokazu: *See—*
Murayama, Yoshimasa; and Kurono, Hirokazu,3,581,232.

Kurth, Willi: *See—*
Schmidt, Wolfgang; Kraft, Karl-Josef; and Kurth, Willi,3,579,722.

Kurzke, Herbert; Goltner, Wolfgang; and Seifried, Walter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Vapor deposited metal polyester polycondensation catalysts. 3,580,963, Cl. 260-860.

Kuster, William. Process for separating and recovering bone and collagen from animal by-products. 3,580,725, Cl. 99-7.

Kusters, Eduard, Maschinenfabrik: *See—*
Kusters, Eduard; and Kruger, Max, 3,580,447.

Kusters, Eduard; and Kruger, Max, to Kusters, Eduard, Maschinenfabrik. Textile treating apparatus. 3,580,447, Cl. 226-119.

Kuzina, Alexandra Nikitichna: *See—*
Shenfil, Leonid Zalmanovich; Gul, Valentin Evgenievich; Melnikova, Galina Konstantinovna; Siprikova, Nina Isidorovna; Rozhdestvenskayam, Maiya Konstantinovna; and Kuzina, Alexandra Nikitichna,3,580,776.

Kuzma, John J.; and Gawrych, Robert I., to Olin Mathieson Chemical Corporation. Single selective trigger system for double barrel firearms. 3,579,891, Cl. 42-42.

Kvalheim, Andrew M.; and Mc Evers, Bob L. Lumber and veneer jointer. 3,580,792, Cl. 156-546.

Laber, Werner: *See—*
Piazza, Gian-Franco; Streit, Rudolf; Ulrich, Martin; Laber, Werner; Burkert, Adolf; Tron, Manfred; and Waluga, Wolfgang,3,581,183.

La Croix, George E. Fetal scalp electrode unit. 3,580,242, Cl. 128-2.06

Laderach, Peter, to Hasler A. G. Electronic relay. 3,581,112, Cl. 307-241.

La Forge, David H. Miniature steerable vehicle and track system therefor. 3,579,906, Cl. 46-244.

Laing, Nikolaus. Rotating electrical machine. 3,581,132, Cl. 310-166.

L'Air Liquide, Societe Anonyme pour l'Etude et L'Exploitation des Procedes George Claude:*See—*
Rapinat, Michel, 3,579,997.

L'Air Liquide Societe Anonyme pour l'Etude et L'Exploitation des Procedes Georges Claude:*See—*
Thibault, Jean-Jacques; and Boissin, Jean-Claude, 3,579,998.

Laliberte, Real, to Ayerst, Mc Kenna & Harrison, Ltd. Derivatives of 2-oxocyclopentane carboxylic acid. 3,580,945, Cl. 260-464.

Lamberson, Jack L. Electric teaching device. 3,579,857, Cl. 35-9.

Lambroff, George M.: *See—*
Wilhelm, D F.; Miller, Peter S.; Bissell, D L.; and Lambroff, George M.,3,581,289.

Lambuth, Alan L., to Monsanto Company. Ready-to-use phenolic adhesives. 3,580,872, Cl. 260-17.2

Lamp, Richard W.; Kopf, Joseph E.; Dravis, Donald P.; and Cuneo, Robert A., to Technical Wire Products, Inc. Electrically conductive ventilating panel. 3,580,981, Cl. 174-35.

Lampathakis, Kyriakos E.: *See—*
Seelbach, Walter C.; and Lampathakis, Kyriakos E.,3,581,165.

Lancashire, Thomas, to Boeing Company, The. Materials handling apparatus. 3,580,403, Cl. 214-38.

Landis Tool Company: *See—*
Price, Ralph E., 3,579,914.

Landry, Charles C.: *See—*
Peoples, Joseph T.; and Landry, Charles C.,3,581,106.

Lang, David L.: *See—*
Ligon, James T.; and Lang, David L.,3,580,503.

Lang, Felix C.: *See—*
Plonsker, Harvey R.; Vaughn, Reuben F.; Lang, Felix C.; Aurich, Christoph W.; and Bowie, Philip A.,3,579,761.

Lang, Frederic A., to Du Pont de Nemours, E. I., and Company. Method for post-tensioning tendons. 3,579,931, Cl. 52-741.

Lang, Gunther. Process and tool for forming holes in profiled members with a predetermined spacing. 3,580,040, Cl. 72-324.

Langer, Reinhold: *See—*
Zahn, Wolfgang; Nagel, Erlich; and Langer, Reinhold,3,580,155.

Langmaack, Jurgen: *See—*
Deussner, Herbert; and Langmaack, Jurgen,3,579,850.

Lannegrace, Jean-Paul, to Imprimerie Chaix-Desfosses-Neogravure. Etching method and apparatus. 3,580,827, Cl. 204-143.

Lanza, Vincent L., to Raychem Corporation. Process for irradiating polyvinylidene fluoride and a compatible polyfunctional monomer and product thereof. 3,580,829, Cl. 204-159.17

La Pointe, Lloyd J.; Voegelin, Howard J.; and Hoffman, Ernest G., to Veeder Industries, Inc. Electromagnetic counting mechanism. 3,580,498, Cl. 235-117.

Larson, Charles L., to Jeddeloh Bros. Sweed Mills, Inc. Method and apparatus for plywood panel lay-up. 3,580,778, Cl. 156-299.

Larson, Leighton W. Bi-valved cast. 3,580,248, Cl. 128-89.

Larson, Wesley S., to United States of America, Army, mesne. End clip for load carrying belt. 3,579,641, Cl. 2-325.

Larsson, Bengt D. R.: *See—*
Schnittger, Jan R.; Nilson, Carl-Goran; and Larsson, Bengt D. R.,3,580,492.

La Russa, Joseph, to Farrand Optical Co., Inc. Image-forming apparatus. 3,580,660, Cl. 353-122.

Lasco, Ralph H., to Diamond Alkali Company. Sequestering agents for metal ion contamination in side-chain halogenation of alkyl-aromatic hydrocarbons comprising phosphorous halide and organic phosphate. 3,580,854, Cl. 252-181.
Lathrop, Francis M., II: *See—*
Arsdale, Lyle R. Van; and Lathrop, Francis M., II,3,580,282.
Lauben, Robert W.: *See—*
Beaudoin, Norman R.; and Lauben, Robert W.,3,581,253.
Lauckhardt, Gerhard: *See—*
Muhlbach, Anton; and Lauckhardt, Gerhard,3,579,692.
Laukien, Gunther R. Pulse spectrometer employing sequences of synchronized modulated pulses. 3,581,193, Cl. 324-0.5
Lautenschlager, Alfred Johann, to Oerlikon-Buhrie Holding AG. Method for bringing two stationary gearwheels into engagement with one another on a lapping or testing machine. 3,579,803, Cl. 29-434.
Lavander, Edward J., to Xerox Corporation. Exposure apparatus. 3,580,671, Cl. 355-3.
Lavedan, Louis J., to United States of America, Air Force. Variable polarizer for microwave systems. 3,581,242, Cl. 333-1.
Lazurevskaya, Irina Georgievna: *See—*
Badinter, Efim Yakovlevich; Zelikovsky, Zinovy Ieremeevich; and Lazurevskaya, Irina Georgievna,3,581,262.
L. & C. Steinmuller G.m.b.H.: *See—*
Knizia, Klaus, 3,580,223.
Lear, Siegler, Inc.: *See—*
Daniel, David W.; and McNabb, Warren C., 3,580,027.
Daniel, David W.; Verschaeve, Henry O.; and Mc Nabb, Warren C., 3,580,029.
Maure, Douglas R.; and Wong, Mei Goon, 3,581,066.
Push, Raymond C., 3,580,635.
Leblond, Jean, to Uniroyal Englebert France S.A. Apparatus for shaping tires. 3,580,782, Cl. 156-415.
le Clerc de Bussy, Jacques Marie Yves. Device for regulating the temperature of glass at the outlet of a very high temperature glass melting furnace. 3,580,976, Cl. 13-6.
Ledex, Inc.: *See—*
Reddel, Robert J.; and Brauner, Edward J., 3,581,283.
Lee, Charles A.; and Furbeck, Warren R., to International Paper Company, mesne. Apparatus for making a bias laid ribbon. 3,580,784, Cl. 156-429.
Lee, Henry J. Polyurethane coating system. 3,580,881, Cl. 260-30.4
Lee, James O. Spring check. 3,579,708, Cl. 16-52.
Lee, Richard J. Cartridge case reloading. 3,580,127, Cl. 86-24.
Lee, Yoon Chai; and Trementozzi, Quirino A., to Monsanto Company. Nitrile polymeric blends. 3,580,974, Cl. 260-876.
Leesona Corporation: *See—*
Brouwer, Charles W., 3,580,374.
Settanni, Richard, 3,580,521.
Lefevre, Claude: *See—*
Dolbachian, Raymond; and Lefevre, Claude,3,581,156.
Lefort, Marcel: *See—*
Ceyzeriat, Louis; Gaignon, Maurice; and Lefort, Marcel,3,580,939.
Le Goer, Jean Luc: *See—*
Robert, Andre; Bourdon, Claude; and Le Goer, Jean Luc,3,580,681.
Lehr, Hanns Hanina, to Hoffmann-La Roche Inc. 4-Styrylpyridines. 3,580,909, Cl. 260-240.
Leich, Robert A., to Camdex, Inc. Ammunition reloader. 3,580,128, Cl. 86-31.
Leigh, Thomas, to Imperial Chemical Industries Limited. Resolution process. 3,580,923, Cl. 260-306.7
Leiner, P., & Sons (Encapsulations) Limited: *See—*
Mehta, Maharaj K., 3,579,734.
Mehta, Maharaj Krishen, 3,579,960.
Leiter, Robert Paul; and Ware, Thomas G. Toilet seat cover. 3,579,663, Cl. 4-230.
Leith, Emmett N.; and Upitnieks, Juris, to Battelle Development Corporation, mesne. Wavefront reconstruction. 3,580,655, Cl. 350-3.5
Leitten, Carl F., Jr.: *See—*
Piper, John; and Leitten, Carl F., Jr.,3,581,159.
Leitz, Ernest, G.m.b.H.: *See—*
Franke, Georg G. F., 3,581,099.
Leitz, Ernst, G.m.b.H.: *See—*
Loseries, Peter, 3,580,156.
Lekberg, Robert D. Shipboard recirculation sewage system. 3,579,646, Cl. 4-10.
Lenke, Gerd M., to Standard Brands Chemical Industries, Inc. Unique polymers and processes for producing same. 3,580,894, Cl. 260-79.5
Leonard, Edwin Clifton, to Eskimo Pie Corporation. Container for packing bags. 3,580,470, Cl. 229-15.
Leonard, John E.: *See—*
Watanabe, Hideo; and Leonard, John E.,3,580,239.
Leonardo, Stephen V. Welded member. 3,581,048, Cl. 219-93.
Leone, William C.; and Malone, Robert Lee, to Ex-Cell-O Corporation. Keyboard. 3,581,003, Cl. 178-17.
Leonhard Herbert Maschinenfabrik: *See—*
Balle, Walter; and Pommer, Gunter, 3,579,736.
Leopold, Wilbur R., Jr.; and Smith, John J., to Mueller Co. Wrench. 3,580,270, Cl. 137-318.
Leostic, Joseph, to C.I.T.-Compagnie Industrielle des Telecommunications. Digital controlled step voltage generator. 3,581,116, Cl. 307-264.
Lepetit S.p.A.-Gruppo per la Ricerca Scientifica e la Produzione Chimica Farmacettica: *See—*
Cavalleri, Bruno; Bellasio, Elvio; and Testa, Emilio, 3,580,932.
L'Equipment par l'Acier Inoxydable (Equipinox): *See—*
Nicolin, Andre J., 3,579,711.
Lerardo, Domenic: *See—*
Adams, Richard C.; Coombes, William S.; and Lerardo, Domenic,3,580,120.
Lerner, Bernard, to Automated Packaging Corporation. Bag handling apparatus and method. 3,579,948, Cl. 53-29.
Lester Engineering Company: *See—*
Schwartz, William H., 3,579,741.
Letsche, Charles E. Pressure control for tube mill. 3,581,046, Cl. 219-82.
Lettmann, Heinz: *See—*
Hammelmann, Paul; and Lettmann, Heinz,3,580,511.
Levasseur, Joseph L., to Simcom Corporation. Verification means for character groups. 3,581,063, Cl. 235-61.7
Levenson, Myron F. Dental paste dispensing tool. 3,579,835, Cl. 32-58.
Leveque, Roger: *See—*
Grente, Lucien Ernest; and Leveque, Roger,3,579,789.
Lewis, Daniel W.: *See—*
Arnott, Edward G. F.; and Lewis, Daniel W.,3,581,137.
Lewis, Jerry L.: *See—*
Guth, Eugene D.; Lewis, Jerry L.; and Van Nice, Leslie J.,3,580,961.
Lewis, Ralph M.: *See—*
Moorer, Henry D.; Lewis, Ralph M.; and Stokeld, Richard W., Jr.,3,580,962.
L'homme (Societe Anonyme): *See—*
Biancamaria, Joseph, 3,580,146.
LICENTIA Patent-Verwaltungs-G.m.b.H.: *See—*
Hermes, Heinz; Thieme, Klaus-Dietrich; Gatermann, Willi; Koerv, Peter; and Mehnert, Walter, 3,581,185.
Lichtenberger, Joseph A.: *See—*
Pickup, John; Brandts, Theodorus G.; and Lichtenberger, Joseph A.,3,580,704.
Lico AG: *See—*
Hammann, Heinz; and Dick, Werner, 3,580,551.
Lien, Millard H., to Crane Co. Sink. 3,579,661, Cl. 4-187.
Lightfoot, George L.: *See—*
Tolf, Ingvar L.; Herzing, Vernon J.; Miller, Everett L.; and Lightfoot, George L.,3,580,402.
Ligon, James T.; and Lang, David L. Aerator and fountain attachments for faucets. 3,580,503, Cl. 239-25.
Lilley, Arthur W.: *See—*
Ramsay, Marcus; and Lilley, Arthur W.,3,580,113.
Lilly, Eli, and Company: *See—*
Garbrecht, William L., 3,580,916.
Hayes, Thomas H., 3,579,883.
Limpach, Paul D.: *See—*
Cramer, Donald L.; and Limpach, Paul D.,3,580,021.
Lindberg, Bernt J.: *See—*
De Belder, Anthony N.; and Lindberg, Bernt J.,3,580,903.
Linde Aktiengesellschaft: *See—*
Dorner, Armin, 3,580,959.
Lindsay, Herbert F. Push button time cycle controller. 3,581,027, Cl. 200-38.
Lindsey, L. E. Suspension bracket for conductor insulator. 3,580,534, Cl. 248-221.
Linkison, William Simpson: *See—*
Williams, Albert Etheridge; and Linkison, William Simpson,3,580,809.
Linn, Donald F.: *See—*
Plaat, C Lucas; and Linn, Donald F.,3,580,366.
Lipschutz, Lewis D., to International Business Machines Corporation. Thermocompression bonding apparatus. 3,580,460, Cl. 228-4.
Lipton, Charles H.: *See—*
Altman, Norman G., 3,581,282.
Liquid Controls Corporation: *See—*
Siebold, Howard E., 3,580,073.
Lister, Fred: *See—*
Stone, Raymond A.; Lister, Fred; and Heller, David S.,3,580,876.
Littlefield, Derwood F., to General Electric Company. Solid state pulsed electronic control for high speed conveyor sorting device. 3,580,391, Cl. 209-73.
Litton Precision Products, Inc.: *See—*
Spadoni, Frank G., Jr.; and Kleban, Michael P., 3,580,297.
Litton Systems, Inc.: *See—*
Maffitt, Kent N., 3,580,771.
Uridil, Joseph E., 3,580,840.
Littwin, Sheldon; and Schure, Alexander. Teaching device. 3,579,864, Cl. 35-9.
Litvinov, Anatoly Ivanovich: *See—*
Khimich, Georgy Lukich; Niskovskikh, Vitaly Maximovich; Varaxin, Alexei Ivanovich; Gelfenbein, Evgeny Jukhimovich; Bykov, Leonid Alexandrovich; Litvinov, Anatoly Ivanovich; and Karlinsky, Stanislav Evgenievich,3,580,327.
Liu, John K.: *See—*
Kron, Harold O.; Liu, John K.; and Behnke, Edward,3,580,371.
Lloyd, Norman C.: *See—*
Pearce, Christopher A.; and Lloyd, Norman C.,3,580,941.

Lockhart Manufacturing Corporation: *See—*
Hebert, Gerard E., 3,580,602.
Loeffler, Herbert V. Sprayer boom assembly. 3,580,505, Cl. 239-168.
Loewenstein, Gideon. Sanitary single use toilet seat covers. 3,579,669, Cl. 4-245.
Lofgreen, Earston Arthur, to Occidental Petroleum Corporation. Plastic mulch. 3,580,196, Cl. 111-1.
Lofroth, Enar, to Aktiebolaget Atomenergi. Nuclear reactor fuel element with non-aligned channeling. 3,580,808, Cl. 176-74.
Logan, Edwin W.: *See—*
Hunter, Lee; Senften, David A.; and Logan, Edwin W.,3,579,845.
Logan, Jonathan, Inc.: *See—*
Willis, David M., 3,579,679.
Logan, Robert P.; and Albertson, Orris E., to Dorr-Oliver Incorporated. Heat treated waste sludge disposal. 3,580,193, Cl. 110-8.
Logistics Industries Corporation: *See—*
Reese, Larrie S., 3,580,469.
Lombos, Lazlo; and Hughes, Michael Robert, to Dinorwic Slate Quarries Company Limited. Manufacture of slates. 3,580,235, Cl. 125-3.
Long, Joseph F., to International Dynetics Corporation. Compaction apparatus. 3,580,166, Cl. 100-49.
Longo, Vincent,: *See—*
Batlas, George X., 3,580,510.
Lonza-Werke GmbH: *See—*
Gerlach, Fritz; Hauskrecht, Toni; and Holch, Hermann, 3,580,764.
Loomis Machine Company: *See—*
Hecker, Robert W., Jr.; and Beckwith, Robert C., 3,579,696.
Lord Corporation: *See—*
Schmitt, Regis V., 3,580,532.
Lorenzo, Valentin E.: *See—*
Hernandez, Tomas; and Lorenzo, Valentin E.,3,579,848.
Loseries, Peter, to Leitz, Ernst, G.m.b.H. Swinging sector shutter for photographic cameras. 3,580,156, Cl. 95-60.
Losert, Gerhard K., to General Electric Company. Timer with visual indicator for period of operation. 3,581,026, Cl. 200-38.
Loshbough, Richard C., to Reliance Electric Company. Escalator system having fault indicator. 3,580,376, Cl. 198-16.
Loughridge, Frederick A.: *See—*
Britt, Richard G.; and Loughridge, Frederick A.,3,580,710.
Lovelace Foundation for Medical Education and Research: *See—*
Coffey, H. Franklin; and Powers, Samuel T., 3,580,591.
Lowery, Louie R., to Keyes Fibre Company. Arrangement for bagging articles. 3,579,951, Cl. 53-55.
Lowry Development Corporation: *See—*
Lowry, Robert D.; and Strout, Russell B., 3,579,662.
Lowry, Robert D.; and Strout, Russell B., to Lowry Development Corporation. Freeze protected waste trap. 3,579,662, Cl. 4-206.
Loy, George W., to Scio Cabinet Company, Inc. Plastic laminating apparatus. 3,580,787, Cl. 156-477.
LTV Aerospace Corporation: *See—*
Boyce, William C.; and Matza, Edward C., 3,580,528.
Mills, Oscar F., 3,580,411.
Luca, Ioan, to Institutal de Cercetari Tehnologice Pentru Constructii de Masini. Method and apparatus for manufacturing finned pipes. 3,580,026, Cl. 72-96.
Lucas, Joseph, (Industries) Limited: *See—*
Hicks, Harris Vernon, 3,580,663.
Snell, John, 3,579,933.
Wilson, Raymond Michael Christopher, 3,581,205.
Lucek, John R., to General Electric Company. Discharge control element for glass-melting furnaces. 3,580,714, Cl. 65-330.
Luders, Walter: *See—*
Maar, Herbert; Steppan, Hartmut; Messwarb, Gunter; and Luders, Walter,3,580,888.
Ludlow Typograph Company: *See—*
Higgason, Frank G., Jr.; and Sehnert, Robert J., 3,580,494.
Lukens, Edward E. Foam plastic panel without truss members. 3,579,937, Cl. 52-309.
Luksch, James A.: *See—*
Zimmerman, Arie; Luksch, James A.; and Smith, Gerald D.,3,581,209.
Lumbeck, Gerd: *See—*
Klein, Kurt; Lumbeck, Gerd; and Maluzi, Joachim,3,580,519.
Lumex, Inc.: *See—*
Murcott, Charles E., 3,580,631.
Lummus Company, The: *See—*
Lutz, Irvin H., 3,580,838.
Lutsey, Thomas H., to Big Drum, Inc. Apparatus for producing frozen coated ice-cream cones. 3,580,188, Cl. 107-1.
Luttich, Werner Richard Gotthard. Tobacco flavoring. 3,580,259, Cl. 131-144.
Lutz, Albert William, to American Cyanamid Company. Process for preparing substituted-6 trifluoromethyluracils. 3,580,913, Cl. 260-260.
Lutz, Irvin H., to Lummus Company, The. Hydrocarbon pyrolysis process. 3,580,838, Cl. 208-100.
Lyall Electric, Inc.: *See—*
Shroyer, Larry L., 3,581,270.
Lynch Corporation: *See—*
Hamilton, Joseph R., 3,580,711.
Lynnworth, Lawrence C., to Panametrics, Inc., mesne. Dual ultrasonic sensors employing a single mode of ultrasonic transmission. 3,580,058, Cl. 73-67.7
Lyons, Donald H.: *See—*
Crites, Nelson A.; and Lyons, Donald H.,3,580,079.
Lyons, Vincent J.: *See—*
Blakeslee, A Eugene; Gukelberger, Thomas F., Jr.; and Lyons, Vincent J.,3,580,732.
Lytle, Richard F.: *See—*
Schuder, Charles B.; Skov, Victor E.; and Lytle, Richard F.,3,580,288.
Maar, Herbert; Steppan, Hartmut; Messwarb, Gunter; and Luders, Walter, to Kalle Aktiengesellschaft. Polyethers capable of being cross-linked under the action of light and process for their manufacture. 3,580,888, Cl. 260-47.
Maasshoff, Gunter, to Hawk Oil Field Equipment Corporation. Valve operating mechanism. 3,580,138, Cl. 91-277.
Machet, Adrien, to Etablissements MACHET. Explosive table decoration. 3,580,173, Cl. 102-37.2
Machlett Laboratories, Incorporated, The: *See—*
Peyser, Leonard F.; and Bavor, Gordon F., 3,581,094.
Mac Kenzie, Douglas James, to American Standard, Inc. Thermocouple failure indicating device. 3,580,078, Cl. 73-344.
Mac Key, Donald I.; and Mac Key, Terance Donald. Cold drawing of nylon filaments. 3,579,762, Cl. 28-71.3
Mac Key, Terance Donald: *See—*
Mac Key, Donald I.; and Mac Key, Terance Donald,3,579,762.
Mac Phee, Colin A. A.; and Haene, Antonio C. P., to Borg Warner Corporation, mesne. Thermoelectric module with diagonal construction and method of manufacturing. 3,580,743, Cl. 136-212.
Maeda, Seiichiro: *See—*
Ito, Teruhiko; Mitsui, Naoshi; Maeda, Seiichiro; and Kato, Takeshi,3,580,866.
Maes, Michael E., to Explosives Corporation of America. Field sensitized explosive devices and sensitizing method. 3,580,171, Cl. 102-28.
Maffitt, Kent N., to Litton Systems, Inc. Method for rendering an irregular surface smooth utilizing direct contact transfer. 3,580,771, Cl. 156-235.
Magi, Hugo, to Dominion Auto Accessories Limited. Lamp housing and electric terminal construction. 3,581,080, Cl. 240-8.2
Magi, Hugo; and Smith, John, to Aqua-Marine Manufacturing Limited. Marine running light construction. 3,581,079, Cl. 240-7.5
Mahler, Charles J.: *See—*
Hansen, Richard C.; Mahler, Charles J.; Soures, Nicholas M.; and Stickney, Thomas L.,3,581,000.
Maitland, Peter; and Ehrhorn, Richard W. System for simultaneous reception of multiple signals. 3,581,211, Cl. 325-451.
Makela, Aarne Olavi, to Osakeyhtio, A. Ahlstrom. Arrangement for the adjustment of the position of movable machine elements. 3,581,103, Cl. 250-231.
Makino, Tomio, to Nichiel Denki Sangyo K.K. Curling bobbin and heater. 3,581,055, Cl. 219-222.
Malenge, Pierre. Design grid with variable guide. 3,579,859, Cl. 35-27.
Mallory, Donald G.; and Turner, Lyman H., to Xerox Corporation. Sheet feeding apparatus. 3,580,565, Cl. 271-39.
Malone, Robert Lee: *See—*
Leone, William C.; and Malone, Robert Lee,3,581,003.
Maltais, Frederick Jean, to AMP Incorporated. Spring clip. 3,580,619, Cl. 287-53.
Maltby, Todwick: *See—*
Bond, Harry Laurence Fred; Stubbs, Dennis; and Maltby, Todwick,3,580,035.
Maltsev, Mikhail Vasilievich: *See—*
Beresnev, Boris Ivanovich; Bulychev, Dmitry Konstantinovich; Martynov, Evgeny Dmitrievich; Ryabinin, Jury Nikolaevich; Rodionov, Kuzma Petrovich; Maltsev, Mikhail Vasilievich; Britnev, Georgy Pavlovich; and Kocherov, Anatoly Vasilievich,3,580,019.
Maluzi, Joachim: *See—*
Fratzscher, Helmut; Klein, Kurt; Maluzi, Joachim; Hansen, Peter; and Schmitz, Werner,3,580,844.
Klein, Kurt; Lumbeck, Gerd; and Maluzi, Joachim,3,580,519.
Mancini, John. Novel pitch adjustment means for stringed instruments. 3,580,124, Cl. 84-313.
Mandil, Harry: *See—*
Weems, Sterling J.; and Mandil, Harry,3,580,806.
Mandonas, Nicholas J.; and Ryll, Paul A., to Western Electric Company. Apparatus for abrading articles. 3,579,922, Cl. 51-165.
Mandrell, Melford E.; and Blaser, Wayne W., to Dow Chemical Company, The. Method of determining the rate of vapor transmission through sheet materials. 3,580,067, Cl. 73-159.
Mannesmann Aktiengesellschaft: *See—*
Schrewe, Hans, 3,580,325.
Manning, Peter R. J., to Tri-Ang Toys Limited. Fertilizer distributor. 3,580,426, Cl. 222-177.
Manos, Philp, to Du Pont de Nemours, E. I., and Company. Imidazole preparation. 3,580,925, Cl. 260-309.
Mansei Kogyo Kabushiki Kaisha: *See—*
Goto, Kenjiro, 3,580,698.
Mansfield, Richard C.: *See—*
Mickus, James C.; Fordyce, David B.; and Mansfield, Richard C.,3,580,855.
Manz, August F., to Union Carbide Corporation. Synchro-arc metal transfer. 3,581,053, Cl. 219-137.
Marandi, Ali; and Solomon, Kenneth H., to Rain Bird Sprinkler Mfg. Corporation. Motor for rotating jet sprinkler. 3,580,508, Cl. 239-241.

Marathon Oil Company: *See—*
Gogarty, William B.; and Mc Atee, Richard W., 3,580,337.

March, Willis Paul: *See—*
Fraser, Colin Kenneth Glenn; Favreau, Ernest; and March, Willis Paul,3,580,546.

Marek, Charles: *See—*
Keltz, Lawrence W.; and Marek, Charles,3,579,688.

Maremont Corporation: *See—*
Plonsker, Harvey R.; Vaughn, Reuben F.; Lang, Felix C.; Aurich, Christoph W.; and Bowie, Philip A., 3,579,761.

Marik, James, to Marik Spring, Inc. Tie-down clip. 3,579,746, Cl. 24-131.

Marik Spring, Inc.: *See—*
Marik, James, 3,579,746.

Markow, Demeter: *See—*
Rasworschegg, Heinrich; Markow, Demeter; and Sandri, Alfred,3,580,718.

Marks, Lawrence P., to Smith, A. O., Corporation. Load tie down tensioner. 3,580,187, Cl. 105-369.

Marmon Groups, Inc., The: *See—*
Kershaw, John Knox, 3,579,873.

Marondel, Gunther: *See—*
Gawlick, Heinz; and Marondel, Gunther,3,580,180.

Marquette Electronics, Inc.: *See—*
Johnson, Gilbert A., 3,580,243.

Marshall Sons & Company Limited: *See—*
Barsby, Alan, 3,580,237.

Martin, Benjamin P. Sailboat. 3,580,203, Cl. 114-39.

Martin, Edward J., Jr. Flexible amplification system. 3,581,221, Cl. 330-24.

Martin, Francis C.; and Nicklas, James P., to Cornell Aeronautical Laboratory, Inc. Pattern recognition computer. 3,581,281, Cl. 340-146.3

Martin, Fred D., to Dow Chemical Company, The. Electromechanical recorder automatic zero apparatus. 3,581,204, Cl. 324-130.

Martin, George, to American Standard, Inc. Shower head. 3,580,513, Cl. 239-460.

Martin, Johannes Josef. Grate for industrial furnaces. 3,580,195, Cl. 110-35.

Martin, William S., to General Electric Company. Face-pumped laser device with optical path folding. 3,581,229, Cl. 331-94.5

Martinelli, Saverio; and De Varda, Giorgio, to Societa Italiana Telecommunicazioni Siemens S.p.A. Time-sharing telecommunication system. 3,581,016, Cl. 179-15.

Martino, Joseph J. Circuit board drier. 3,579,853, Cl. 34-218.

Martynov, Evgeny Dmitrievich: *See—*
Beresnev, Boris Ivanovich; Bulychev, Dmitry Konstantinovich; Martynov, Evgeny Dmitrievich; Ryabinin, Jury Nikolaevich; Rodionov, Kuzma Petrovich; Maltsev, Mikhail Vasilievich; Britnev, Georgy Pavlovich; and Kocherov, Anatoly Vasilievich,3,580,019.

Mascaro, Angelo. Switch for sewing machine control and thread cutoff. 3,580,197, Cl. 112-11.

Maschinenfabrik Fr. Niepmann & Co.: *See—*
Niepmann, Otto, 3,580,757.

Masel, Marvin: *See—*
Paradise, Ronald Y.; Masel, Marvin; Naydan, Bob N.; and Brinkman, John D.,3,581,304.

Mason, Charles D.: *See—*
Rosen, Milton K.; and Mason, Charles D.,3,580,898.

Massoubre, Jean-Marie, to Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie. Polymerization of isoprene. 3,580,899, Cl. 260-94.3

Mastrapas, George V. Reinforced tire. 3,580,316, Cl. 152-200.

Masuda, Takeo, to Aiwa Co., Ltd. Dynamic microphone. 3,581,015, Cl. 179-121.

Matsubara, Yukio: *See—*
Yamamura, Katsumi; Miyasaka, Tsugumitsu; Hayashi, Shinichi; Yamamoto, Masao; and Matsubara, Yukio,3,580,820.

Matsuda, Shogo: *See—*
Shimodoi, Yutaka; Ootake, Heiichiro; Mihara, Kouichi; Takao, Kiyoshi; and Matsuda, Shogo,3,580,735.

Matsumoto, Masamiki; Nishino, Motohisa; and Tanaka, Yoshimasa, to Matsushita Denko Kabashiki Kaisha. Electric dry shaver. 3,579,824, Cl. 30-43.92

Matsuo Electric Company, Limited: *See—*
Matsuo, Masao; and Tomiwa, Hiroshi, 3,579,811.
Tomiwa, Hiroshi, 3,579,813.

Matsuo, Masao; and Tomiwa, Hiroshi, to Matsuo Electric Company, Limited. Method of making passive electronic components including laminating terminals. 3,579,811, Cl. 29-570.

Matsushita, Akira. Capacitors and production thereof. 3,579,769, Cl. 29-25.42

Matsushita Denko Kabashiki Kaisha: *See—*
Matsumoto, Masamiki; Nishino, Motohisa; and Tanaka, Yoshimasa, 3,579,824.

Matsushita Electric Industrial Co., Ltd.: *See—*
Araki, Shigeru; Takahashi, Shozo; and Muto, Ichiro, 3,580,649.
Kitano, Yasushi; and Fujita, Kozo, 3,580,355.
Suzuki, Yoshiaki; and Inamoto, Toshiharu, 3,581,288.
Yamashita, Akio; and Tuzaki, Takehiro, 3,581,233.

Matt, Richard J.; and Restelli, Ronald E., to Textron Incorporated. Method of making a bearing having a full complement of balls. 3,579,780, Cl. 29-148.4

Mattel, Inc.: *See—*
Osborne, Brian G., 3,579,902.
Stastny, Edwin O.; Stormon, Lester T.; and Sims, Anson, 3,580,585.

Matthews, William F. Rotary tool attachment for chain saw motor. 3,580,342, Cl. 173-29.

Mattil, Howard F., to Phelps Dodge Copper Products Corporation. Method and apparatus for corrugating tubes. 3,580,024, Cl. 72-77.

Mattsson, Orjan Mats; and Widl, Walter Herbert Ewin, to Telefonaktiebolaget L M Ericsson. Arrangement for disconnecting a defective local concentrator in a data transmission system. 3,581,075, Cl. 235-153.

Matuda, Morio: *See—*
Miya, Bunji; Hoshino, Fumiro; and Matuda, Morio,3,580,930.

Matulewicz, Leonard A. Method and apparatus for producing a stream feeder. 3,579,807, Cl. 29-471.3

Matveev, Boris Nikolaevich: *See—*
Zayats, Iosif Lvovich; Barabashkin, Vladimir Pavlovich; Matveev, Boris Nikolaevich; and Shevakin, Jury Fedorovich,3,580,036.

Matza, Edward C.: *See—*
Boyce, William C.; and Matza, Edward C.,3,580,528.

Maugis, Pierre Marcel, to Societe Technique de Geothermie. Geothermal system. 3,580,330, Cl. 165-45.

Maul, John A.; Zofchak, James T.; and Anderson, David D., to Addressograph-Multigraph Corporation. Settable drum series printing wheel arrangement. 3,580,169, Cl. 101-110.

Maure, Douglas R.; and Wong, Mei Goon, to Lear Siegler, Inc. Programmable counting circuit. 3,581,066, Cl. 235-92.

Maxey, Edward Stanton. Video landing and departure system. 3,580,996, Cl. 178-6.8

Maxwell, James D. Collapsible fish net. 3,579,890, Cl. 43-12.

Maxwell, Jerrold F.: *See—*
Boehmer, Matthew A.; and Maxwell, Jerrold F.,3,580,847.

May, Michael, to Fichtel & Saahs AG. Method and means for switching on and off the fan wheel of a regulating fan. 3,580,229, Cl. 123-41.12

Mazza, Lamberto, to Industrie A. Zanussi S.p.A. Machine having a rotary motion, especially washing machine, furnished with ballast. 3,580,014, Cl. 68-23.1

McAndrew, Francis B.; Price, Martin B.; and Berardinelli, Frank M., to Celanese Corporation. Process for purifying acetals. 3,580,928, Cl. 260-340.

Mc Atee, Richard W.: *See—*
Gogarty, William B.; and Mc Atee, Richard W.,3,580,337.

Mc Avoy, Thomas: *See—*
Kuffer, Clarence O.; and Mc Avoy, Thomas,3,580,431.

McCabe, Francis J. Fabricated ventilator and method of producing same. 3,580,160, Cl. 98-121.

Mc Call, Frank S.: *See—*
Burke, Wiliam R.; and Mc Call, Frank S.,3,580,471.

McCallum, James: *See—*
Firth, Donald; Hancock, Roger Harvey Yorke; and McCallum, James,3,579,988.

McCammon, James Elvin. Brake operated accelerator disconnect device. 3,580,370, Cl. 192-3.

Mc Carthy, James B., to Game Innovations, Inc. Bouncing ball game method. 3,580,578, Cl. 273-95.

McCarthy, Richard H., to Stearns Electric Corporation. Universal mounting plate and construction method. 3,580,367, Cl. 188-206.

McClain, Albert D., Jr.: *See—*
Kidd, Thomas L., Jr.; and McClain, Albert D., Jr.,3,580,755.

McClure, Arthur A., to Cerrito, Michael. Insert chaser die head. 3,580,690, Cl. 408-178.

McCombie, Alan Keith: *See—*
Davies, Robert William; Hall, Charles Thomas; Hinchcliffe, Dennis; McCombie, Alan Keith; and Youngman, Derek Henry,3,579,952.

Mc Dermott, Louis W. Driver training car throttle disconnect. 3,580,100, Cl. 74-482.

McDevitt, James A., to Continental Can Company, Inc. Nestable double-walled disposable container. 3,580,468, Cl. 229-14.

McDonnell Douglas Corporation: *See—*
Brown, Ian McLaren, 3,581,190.
Rosner, Robert E., 3,580,870.

Mc Donnell, Thomas M. Removable shelf. 3,580,191, Cl. 108-152.

Mc Evers, Bob L.: *See—*
Kvalheim, Andrew M.; and Mc Evers, Bob L.,3,580,792.

McFarland, James D., Jr.: *See—*
Schiefer, Paul J.; and McFarland, James D., Jr.,3,580,372.

Mc Gee, Donald J., to Dura Corporation. Tapered spring leaf suspension for driver tandem axile assembly. 3,580,347, Cl. 180-22.

McGee, Joe H.: *See—*
Hood, John L.; and McGee, Joe H.,3,581,173.

McGrail, Patrick T.: *See—*
Clachan, Margaret L.; McGrail, Patrick T.; and Shephard, Basil R.,3,580,734.

Mc Grath, Martin H. Vip jacket under skid wire of paper power cables. 3,579,863, Cl. 174-10.

McHargue, Clifford. Device for extracting a mired motor vehicle. 3,580,317, Cl. 152-208.

Mc Intyre, Daniel, to Emhart Corporation. Magazine construction for packing case erecting machine. 3,580,143, Cl. 93-53.

McKay Company, The: *See—*
Delong, William T., 3,580,748.

McKim, Jack D.; and Ulmer, Harold W. Direct view high intensity readout module having conical light conveyor tube. 3,581,307, Cl. 340-366.
McKnight, Charles Allen. Surgical instrument. 3,580,313, Cl. 145-46.
McLaren, Terrence F. Truck. 3,580,346, Cl. 180-19.
McLaughlin, William I., to Morgren, C. A., Co. Directional control valve. 3,580,287, Cl. 137-625.69
Mc Lean, Leslie R. Motorized float. 3,579,680, Cl. 9-1.
McLoughlin, Bernard Joseph: *See—*
Brown, Ivor James Stewart; Clarkson, Richard; Crossley, Neville Stanton; and McLoughlin, Bernard Joseph,3,580,905.
McMullen, John J., Associates, Inc.: *See—*
Pangalila, Frans V. A., 3,580,207.
McMurray, William, to General Electric Company. Fast response stepped-wave switching power converter circuit. 3,581,212, Cl. 328-14.
McNabb, Warren C.: *See—*
Daniel, David W.; and McNabb, Warren C.,3,580,027.
Mc Nabb, Warren C.: *See—*
Daniel, David W.; Verschaeve, Henry O.; and Mc Nabb, Warren C.,3,580,029.
McNaney, Joseph T. Light guide character forming mask and display device control element. 3,581,308, Cl. 340-380.
Mc Nitt, Lewis F., to Midland-Ross Corporation. Fifth wheel support system. 3,580,611, Cl. 280-433.
Mead Corporation, The: *See—*
Cassill, William Guy, 3,580,515.
Medi-Tech Incorporated: *See—*
Bentov, Itzhak E., 3,579,858.
Mee, John D.; and Heseltine, Donald W., to Eastman Kodak Company. Photographic materials. 3,580,911, Cl. 260-240.65
Mehnert, Walter: *See—*
Hermes, Heinz; Thieme, Klaus-Dietrich; Gatermann, Willi; Koerv, Peter; and Mehnert, Walter,3,581,185.
Mehta, Maharaj K., to Leiner, P., & Sons (Encapsulations) Limited. Float-operated level control. 3,579,734, Cl. 18-15.
Mehta, Maharaj Krishen, to Leiner, P., & Sons (Encapsulations) Limited. Powder-encapsulation machine. 3,579,960, Cl. 53-184.
Meijer, Albertus Cornelis, to U.S. Philips Corporation, mesne. Neutron spectrometer employing two semi- conductor counters in combination with a coincidence circuit for eliminating background. 3,581,091, Cl. 250-83.1
Meisner, Alfred; and Spitzl, Walter, to Diehl. Stepping wheel. 3,581,128, Cl. 310-21.
Meldau, Robert F., to Phillips Petroleum Company. Production of oil from a pumping well and a flowing well. 3,580,336, Cl. 166-267.
Melnikova, Galina Konstantinovna: *See—*
Shenfil, Leonid Zalmanovich; Gul, Valentin Evgenievich; Melnikova, Galina Konstantinovna; Siprikova, Nina Isidorovna; Rozhdestvenskayam, Maiya Konstantinovna; and Kuzina, Alexandra Nikitichna,3,580,776.
Menell, Hans; and Scheithauer, Walter, to Continental Gummi-Werke Aktiengesellschaft. Pneumatic vehicle tire. 3,580,318, Cl. 152-354.
Mentzer, William R., Jr.: *See—*
Bauer, Peter; and Mentzer, William R., Jr.,3,580,499.
Menzies, William C., Jr., to Atlantic Wool Combing Co. Apparatus for separating fibers. 3,579,744, Cl. 19-97.5
Merck & Co., Inc.: *See—*
Patchett, Arthur A.; and Hannah, John, 3,580,936.
Merkwacz, Joseph, to Garlock Inc. Reinforced expansion. 3,580,616, Cl. 285-229.
Merlin Gerin, Societe Anonyme: *See—*
Pelenc, Yves J.; and Bernard, Georges M., 3,581,202.
Mero, Thomas J.: *See—*
Brown, Archer W.; Montgomery, James L.; Beer, Walter A.; and Mero, Thomas J.,3,580,345.
Merola, Anthony, to Amerola Products Corporation, mesne. Billiard cue and replaceable cue tip assembly. 3,580,576, Cl. 273-70.
Merrill, Neal W.; and Nippert, Charles R., to Bethlehem Steel Corporation. Automated stops for bar bending machine. 3,580,023, Cl. 72-22.
Merten, Rudolf: *See—*
Diehr, Hans Joachim; Merten, Rudolf; Piechota, Helmut; and Uhlig, Konrad,3,580,868.
Ware, Gordon K.; Diehr, Hans Joachim; Merten, Rudolf; Piechota, Helmut; and Uhlig, Konrad,3,580,890.
Merz, Manfred, to Honeywell G.m.b.H. Speed control circuit with two voltage sourced to enable precise speed control over a large speed range. 3,581,175, Cl. 318-305.
Messrs. Gebruder Junghons Gesellscaft mit Beschrankter Haftung: *See—*
Ganter, Wolfgang; and Assmus, Friedrich, 3,581,129.
Messrs. Volkswagenwerk A. G.: *See—*
Schwenk, Kurt; Gallasch, Ernst; Hablitzel, Hermann; and Jacob, Friedrich, 3,579,727.
Messwarb, Gunter: *See—*
Maar, Herbert; Steppan, Hartmut; Messwarb, Gunter; and Luders, Walter,3,580,888.
Metal Box Company Limited, The: *See—*
Davies, Kenneth Knapton, 3,580,465.
Metallgesellschaft Aktiengesellschaft: *See—*
Nonnenmacher, Friedrich Karl, 3,580,389.
Metrodynamics Corporation, The: *See—*
Grady, Charles B., Jr., 3,581,187.
Metz, Peter J., Jr., to Crown Zellerbach Corporation. Apparatus for balancing pressure applied to film- forming material in the deposition thereof onto a casting surface. 3,579,735, Cl. 18-15.
Meyer, Forrest C., to Systems Peripherals Division, mesne. Variable frequency delay line differentiator. 3,581,215, Cl. 328-56.
Meyer, Walter, to Oak Electro/netics Corporation. Disc wafer rotary switch with stator printed circuit contact structure and rotor. 3,581,023, Cl. 200-11.
Meyer, Walter, to Oak Electro/netics Corporation. Wafer rotary switch with stator printed circuit contact structure and rotor. 3,581,024, Cl. 200-11.
Meyers, Theodore F., to Hobart Manufacturing Company, The. Hot water heater. 3,581,057, Cl. 219-312.
Meylan-Rochat, Andre, to Parechoc S.A. Regulator-assembly for timepiece. 3,579,977, Cl. 58-112.
Mez Machod, Narodni Podnik: *See—*
Richter, Cestmir, 3,581,131.
Michalke, Klaus A.: *See—*
Verdoodt, Marcel E.; and Michalke, Klaus A.,3,579,698.
Michels, Charles E., to Wrapping Machinery Company, Inc. Wrapping method and apparatus. 3,579,949, Cl. 53-33.
Mickus, James C.; Fordyce, David B.; and Mansfield, Richard C., to Rohm and Haas Company. Process for inhibition of scale and corrosion using a polyfunctional phosphate polyol ester having at least 75% primary phosphate ester groups. 3,580,855, Cl. 252-181.
Microdot Inc.: *See—*
Williams, Charles A.; and Waller, Richard E., 3,579,793.
Middlebrooks, Ollie, to Continental Carbon Company. Apparatus for pelletizing carbon black. 3,579,717, Cl. 18-1.
Midland Silicones Limited: *See—*
Pearce, Christopher A.; and Lloyd, Norman C., 3,580,941.
Midland-Ross Corporation: *See—*
De Penti, Kenneth L., 3,580,400.
Mc Nitt, Lewis F., 3,580,611.
Willison, Donald; and Depenti, Kenneth L., 3,580,399.
Mieras, Spencer H., to Borg-Warner Corporation. Differential mechanism. 3,580,108, Cl. 74-711.
Mifflin, Ralph W. Apparatus for deriving the probability density function of a signal with respect to amplitude. 3,581,200, Cl. 324-77.
Mihalkanin, Peter. Tape wrapping apparatus with traveling wheel gear. 3,580,785, Cl. 156-468.
Mihara, Kouichi: *See—*
Shimodoi, Yutaka; Ootake, Heiichiro; Mihara, Kouichi; Takao, Kiyoshi; and Matsuda, Shogo,3,580,735.
Mihic, Wlajko. Tool holder assemblies. 3,579,776, Cl. 29-96.
Mikolajczak, Alojzy A., to United Aircraft Corporation. Seal construction. 3,580,692, Cl. 415-174.
Miles, Ray P. Skate device for transporting large objects. 3,580,601, Cl. 280-47.13
Milewski, John V.; and Shyne, James J., to General Technologies Corporation. Method of treating the surface of a filament. 3,580,731, Cl. 117-66.
Milewski, Victor, to Valeron Corporation, The. Helical end mill. 3,579,777, Cl. 29-105.
Milford, Richard E., to Honeywell Information Systems Inc., mesne. Optical reading device. 3,581,100, Cl. 250-216.
Milichovsky, Bohumil: *See—*
Jisa, Miloslav; Zmatlik, Josef; Mohelnicky, Josef; and Milichovsky, Bohumil,3,580,295.
Millar, Alastair Gordon: *See—*
Russell, Alexander; and Millar, Alastair Gordon,3,581,180.
Miller, Everett L.: *See—*
Tolf, Ingvar L.; Herzing, Vernon J.; Miller, Everett L.; and Lightfoot, George L.,3,580,402.
Miller, Harold A.; Nider, William K.; and Zavialoff, Igor P., to Sieracin Corporation, The. Apparatus for stretching sheet material. 3,579,718, Cl. 18-1.
Miller, John Everett. Polybase counter. 3,579,866, Cl. 35-32.
Miller, Peter S.: *See—*
Wilhelm, D F.; Miller, Peter S.; Bissell, D L.; and Lambroff, George M.,3,581,289.
Miller, Sheldon M.: *See—*
Burns, Alvin G.; and Miller, Sheldon M.,3,580,586.
Mills, James Claiborne, Jr.; and Hays, Gordon W., to AMF Incorporated. Bagging apparatus. 3,579,957, Cl. 53-190.
Mills, Oscar F., to LTV Aerospace Corporation. Container having moveable wall. 3,580,411, Cl. 220-4.
Milton, Rex W., to Bauer & Associates, Inc. Shielded arc welding control system. 3,581,052, Cl. 219-131.
Minetos, Nicolae, to Institutul de Cercetari Stiintifice Pentru Protectia Muncii. Protection device for a circular cutting saw. 3,580,307, Cl. 143-159.
Mingotti, Aurelio, to S. A. C. M. I. Cooperativa Meccanici Imola Soc. Coop. A. R. L. Fly press for producing ceramic tiles. 3,579,757, Cl. 25-45.
Ministerul Industriei Constructillor de Masini: *See—*
Iliescu, Liviu; and Dragos, Ion, 3,580,682.
Minnesota Mining & Manufacturing Company: *See—*
Hubin, Allen J., 3,580,887.
Minnesota Mining and Manufacturing Company: *See—*
Wear, Robert L., 3,580,927.
Mintz, Leonard A. Stamping press with linearly applied force. 3,580,794, Cl. 156-581.

Mintz, Michael J., to Dow Chemical Company, The. Photochlorination of monoh and Di-chloroethane. 3,580,831, Cl. 204-163.
Misare, Donald O., to Joslyn Mfg. and Supply Co. Corona free coupling assembly for coaxial cables. 3,580,986, Cl. 174-73.
Mitchell, James W., Jr., to Ford Motor Company. Spot welding process. 3,581,047, Cl. 219-91.
Mitchell, Ralph W. Cutter chain. 3,580,639, Cl. 299-84.
Mitsubishi Paper Mills, Ltd.: *See—*
Ohyama, Yasushi; and Miyazawa, Sadayuki, 3,580,720.
Mitsubishi Rayon Co., Ltd.: *See—*
Higashimura, Einosuke; Tamai, Katsumi; and Nakamura, Eiichi, 3,580,879.
Ikeda, Masashi; and Inoue, Masayoshi, 3,580,947.
Mitsui, Naoshi: *See—*
Ito, Teruhiko; Mitsui, Naoshi; Maeda, Seiichiro; and Kato, Takeshi,3,580,866.
Mitsui Shipbuilding and Engineering Co., Ltd.: *See—*
Kurashiki, Hajime; and Ikuta, Yoshiharu, 3,580,211.
Mitten, Frank P. Combined wrapping and taping work table. 3,579,962, Cl. 53-390.
Miura, Tanetoshi; Koshikawa, Tsuneji; Nakano, Yasuaki; and Nakayama, Takeshi, to Hitachi, Ltd. Frequency spectrum analyzer with displayable colored shiftable frequency spectrogram. 3,581,192, Cl. 324-77.
Miya, Bunji; Hoshino, Fumiro; and Matuda, Morio, to Kao Soap Co., Ltd. Process for producing gamma-butyrolactone. 3,580,930, Cl. 260-343.6
Miyahara, Michito: *See—*
Ogawa, Kazuki; and Miyahara, Michito,3,580,708.
Miyahune, Yoshio. Perpetual calender. 3,579,882, Cl. 40-107.
Miyamoto, Shoji: *See—*
Onishi, Akira; Anzai, Shiro; Irako, Koichi; Fujio, Ryota; Hayakawa, Yoshihiro; and Miyamoto, Shoji,3,580,895.
Miyasaka, Tsugumitsu: *See—*
Yamamura, Katsumi; Miyasaka, Tsugumitsu; Hayashi, Shinichi; Yamamoto, Masao; and Matsubara, Yukio,3,580,820.
Miyazawa, Sadayuki: *See—*
Ohyama, Yasushi; and Miyazawa, Sadayuki,3,580,720.
Mizrany, Ronald A.: *See—*
Radford, James T.; and Mizrany, Ronald A.,3,579,905.
M&J Development Company: *See—*
Grove, Marvin H., 3,580,765.
M&J Valve Company: *See—*
Arsdale, Lyle R. Van; and Lathrop, Francis M., II, 3,580,282.
Grove, Marvin H., 3,580,765.
Mobil Oil Corporation: *See—*
Cox, John B.; and Stoltz, Jacque R., 3,580,072.
Ruehle, William H., 3,581,274.
Mobley, Odess V., to Hoerner Waldorf Corporation. Stacking trays. 3,580,475, Cl. 229-34.
Mobsby, Eric George Herbert, to United Kingdom Atomic Energy Authority. Acoustic thermometers. 3,580,076, Cl. 73-339.
Mohan, William L.: *See—*
Willits, Samuel P.; and Mohan, William L.,3,581,067.
Mohelnicky, Josef: *See—*
Jisa, Miloslav; Zmatlik, Josef; Mohelnicky, Josef; and Milichovsky, Bohumil,3,580,295.
Mohr, Reinhard: *See—*
Mundlos, Eberhard; Mohr, Reinhard; Trapp, Gunther; and Hohmann, Kurt,3,580,900.
Molins, Desmond Walter, to Molins Machine Company Limited. Cigarettes testing. 3,580,053, Cl. 73-41.
Molins Machine Company Limited: *See—*
Molins, Desmond Walter, 3,580,053.
Molins Machines Company Limited: *See—*
Davies, Robert William; Hall, Charles Thomas; Hinchcliffe, Dennis; McCombie, Alan Keith; and Youngman, Derek Henry, 3,579,952.
Mollen, Ignatius J., to Ariens Company. Self-propelled garden tractor vehicle. 3,580,351, Cl. 180-53.
Mon, George, to United States of America, Army. Method of making capillary assemblies for oxygenators and the like. 3,579,810, Cl. 29-527.1
Monacelli, Umberto. Compressed air stapling machine for metallic staples with control of the anvil for bending the staple ends. 3,580,458, Cl. 227-124.
Mongodin, Guy: *See—*
Greenberg, Sol; Rosen, Heinz; Weinberger, Richard; and Mongodin, Guy,3,580,081.
Monsanto Chemicals Limited: *See—*
Hall, Robert Leonard, 3,580,485.
Monsanto Company: *See—*
Carter, Ernest P.; Bell, Robert P., Jr.; and Carroll, Alton P., Jr., 3,580,296.
Criner, Gaspard X.; and Blackburn, William A., 3,580,763.
Fowler, Timothy J., 3,580,190.
Harrington, Edwin C., Jr., 3,580,134.
Isaksen, Robert A.; and De Shay, Robert V., 3,580,972.
Lambuth, Alan L., 3,580,872.
Lee, Yoon Chai; and Trementozzi, Quirino A., 3,580,974.
Nielsen, Lawrence E.; and Fields, Joseph E., 3,580,882.
Rademacher, Leo E., 3,580,975.
Monsanto Research Company: *See—*
Webster, James A., 3,580,940.
Monsanto Research Corporation: *See—*
Salyer, Ival O.; Jefferson Robert T.; and Ross, William D., 3,580,843.
Monterey Mills, Inc.: *See—*
Nielson, William L., 3,579,647.
Montgomery, James L.: *See—*
Brown, Archer W.; Montgomery, James L.; Beer, Walter A.; and Mero, Thomas J.,3,580,345.
Moore Business Forms Inc.: *See—*
Winston, Rodney W.; and Witham, Peter M., 3,580,614.
Moore, Carroll E., to Farmhand, Inc. Conveyor attachment for portable feed mill. 3,580,548, Cl. 259-95.
Moore, Douglas A.: *See—*
Vogel, Alvin R.; Moore, Douglas A.; Folan, Martin P.; and Buck, John R.,3,581,014.
Moore, Robert B., Jr., to Eastman Kodak Company. Guiding apparatus for eliminating entanglement and twist in puddled multifilament yarn. 3,580,445, Cl. 226-97.
Moore, Robert D. Ashtray structures. 3,580,260, Cl. 131-242.
Moore, Robert D., 1/2 to Faukner, Kenneth F. Entertainment system. 3,580,667, Cl. 352-124.
Moorer, Henry D.; Lewis, Ralph M.; and Stokeld, Richard W., Jr., to Texaco Inc. Alkylation process employing flash vaporization of extracted and acid-treated absorption product. 3,580,962, Cl. 260-683.62
Morain, Eldon W., to Continental Industries, Inc. Tool for simultaneously beveling mating pipes. 3,579,826, Cl. 30-93.
Morel, Joseph. Bone implant. 3,579,830, Cl. 32-10.
Morey, Dennison H., Jr.; Silva, Melvin; and Browning, Gordon D. Capacitance moisture meter and wing-like probe. 3,581,197, Cl. 324-61.
Morey, Thomas H.: *See—*
Pope, Karl D., III; Morey, Thomas H.; and Tierney, Robert R.,3,579,681.
Morgan, Bert B.: *See—*
Caneer, Ralph A.; Anderson, William J.; Morgan, Bert B.; and Goodman, Jerry M.,3,579,760.
Morgan, Douglas H. Artificial articular eminence for the mandibular joint. 3,579,643, Cl. 3-1.
Morgan, John Robert. Support for growing plants. 3,579,908, Cl. 47-45.
Morgan, Philip R., to Acme Appliance Manufacturing Company. Door latch. 3,580,622, Cl. 292-169.
Morgren, C. A., Co.: *See—*
McLaughlin, William I., 3,580,287.
Morioka, Isao. Method for reproducing three-dimensional image. 3,580,758, Cl. 156-58.
Morita, Tosio: *See—*
Watari, Daisaku; and Morita, Tosio,3,581,044.
Moriya, Nobuharu, to Fuji Denki Kogyo Co., Ltd. Apparatus and method for making spherical granules. 3,579,719, Cl. 18-1.
Moro, Antonio, to Soc. per Azioni Fratelli Borletti. Thermally responsive switch. 3,581,263, Cl. 337-380.
Morozowich, Walter; and Sinkula, Anthony A., to Upjohn Company, The. 7-Halo 7-deoxy-lincomycin derivatives. 3,580,904, Cl. 260-210.
Morris, Dennis E., to Varian Associates. Pulse forming network for a short pulse linear accelerator. 3,581,145, Cl. 315-30.
Morris, Leo R., to Dow Chemical Company, The. 1,1-Dichloro-1-nitroethane derivatives. 3,580,948, Cl. 260-487.
Morris, William J., to Philco-Ford Corporation. Cabinet structure. 3,580,650, Cl. 312-7.
Morton, Jack A.: *See—*
Boyle, Willard S.; and Morton, Jack A.,3,581,151.
Moschel, Albrecht, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for purifying polyether amines. 3,580,952, Cl. 260-584.
Moser, William J. Loading ramps for trailers. 3,580,404, Cl. 214-85.
Mosher, Ralph S., to General Electric Company. Articulating mechanism. 3,580,099, Cl. 74-469.
Motorola, Inc.: *See—*
Enderby, Ralph T., 3,581,240.
Gregson, Robert E., 3,581,114.
Knutson, William J., 3,581,239.
Krahulec, Fred, 3,580,177.
Seelbach, Walter C.; and Lampathakis, Kyriakos E., 3,581,165.
Weinberger, Aaron David, 3,581,186.
Mounts, Frank W., to Bell Telephone Laboratories, Incorporated. Redundancy reduction data compressor with luminance weighting. 3,580,999, Cl. 178-7.1
Moyer, Hallard C.; and Fauber, Eugene M., to Atlantic Richfield Company. Paperboard impregnated with a petroleum wax- polyurethane blend. 3,580,736, Cl. 117-155.
Mueller Co.: *See—*
Leopold, Wilbur R., Jr.; and Smith, John J., 3,580,270.
Mueller, Hubert W., Jr.: *See—*
Granberg, Mauritz L.; and Mueller, Hubert W., Jr.,3,581,076.
Mueller, Werner: *See—*
Stutz, Theo; and Mueller, Werner,3,581,301.
Muhlbach, Anton; and Lauckhardt, Gerhard, to USM Corporation. Shoe machines. 3,579,692, Cl. 12-8.3
Muirhead Limited: *See—*
Bell, John, 3,580,205.
Muller, Ernest. Marine propeller shafts bearing arrangements. 3,580,214, Cl. 115-34.

Muller, Gunter: *See—*
Blankenhorn, Gerhard; and Muller, Gunter,3,579,755.

Muller, Jakob. Method and apparatus for detecting an undesired condition of a shuttle-carried weft yarn. 3,580,294, Cl. 139-371.

Muller, Jean Jacques, to International Standard Electric Corporation. Mobile radiotelephone communication system. 3,581,013, Cl. 179-41.

Mumford, Eustace H., to Owens-Illinois, Inc. Glass forming mold elements with yielding supports. 3,580,712, Cl. 65-307.

Mundlos, Eberhard; Mohr, Reinhard; Trapp, Gunther; and Hohmann, Kurt, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Water-soluble quaternary amine containing monoazo dyestuffs. 3,580,900, Cl. 260-149.

Murakami, Yasukazu: *See—*
Numa, Yoshiaki; Nakamachi, Akio; and Murakami, Yasukazu,3,580,917.

Murayama, Yoshimasa; and Kurono, Hirokazu, to Hitachi, Ltd. Tunable semiconductor bulk negative resistance microwave oscillator. 3,581,232, Cl. 331-107.

Murcott, Charles E., to Lumex, Inc. Invalid chair. 3,580,631, Cl. 297-155.

Murphy, David M., to David Manufacturing Co. Grain stirring device. 3,580,549, Cl. 259-102.

Murphy, Edward L. Carousel sign. 3,579,880, Cl. 40-33.

Murphy, Herman G. Snow deflector unit. 3,579,930, Cl. 52-24.

Murray, William Bruce; and Wright, Roy E., to Philadelphia Quartz Company of California. Corrosion prevention with sodium silicate and soluble zinc salts. 3,580,934, Cl. 252-389.

Musgrove, Johnnie J. Mowing machine. 3,579,965, Cl. 56-7.

Mussell, Dorsey R.; and Schwartzbeck, Richard A., to Dow Chemical Company, The. Method for plant growth regulation. 3,580,716, Cl. 71-76.

Muto, Ichiro: *See—*
Araki, Shigeru; Takahashi, Shozo; and Muto, Ichiro,3,580,649.

Muttart, Vincent H. Clamping mechanism for molding machine. 3,579,742, Cl. 18-30.

Myers, John G.; and Field, Joseph H., to United States of America, Interior. Method of removing sulfur oxides from gases. 3,580,702, Cl. 23-25.

Myers, Thomas Leroy, to Stedman Foundry and Machine Company, Incorporated. Breaker plate assembly for a disintegrator. 3,580,520, Cl. 241-299.

Myrice, Frank D.: *See—*
Weaver, Robert L.; and Myrice, Frank D.,3,580,395.

Nagao, Kazuyoshi, to Canon Camera Co., Ltd. Photo-electric and electric light conversion element. 3,581,102, Cl. 250-227.

Nagel, Erlich: *See—*
Zahn, Wolfgang; Nagel, Erlich; and Langer, Reinhold,3,580,155.

Nagy, Ernest J., to Pullman Incorporated. Combination gravity and pneumatic gate arrangement for hoppers. 3,580,642, Cl. 302-52.

Naito, Hiroshi: *See—*
Yashiro, Katsuji; and Naito, Hiroshi,3,580,104.

Nakagawa, Masaharu, to Alps Electric Company Limited. Oscillator feedback circuit for use in UHF tuner. 3,581,237, Cl. 331-117.

Nakamachi, Akio: *See—*
Numa, Yoshiaki; Nakamachi, Akio; and Murakami, Yasukazu,3,580,917.

Nakamori, Shigeru: *See—*
Shiio, Isamu; Nakamori, Shigeru; and Sano, Kounosuke,3,580,810.

Nakamura, Eiichi: *See—*
Higashimura, Einosuke; Tamai, Katsumi; and Nakamura, Eiichi,3,580,879.

Nakano, Yasuaki: *See—*
Miura, Tanetoshi; Koshikawa, Tsuneji; Nakano, Yasuaki; and Nakayama, Takeshi,3,581,192.

Nakanome, Iyohiko; Takeya, Kenji; Suzuki, Hiroshi; and Kitagawa, Yasuhiro, to Japan Exlan Company Limited. Flame-resistant acrylonitrile copolymers with high receptivity to acid dyes. 3,580,878, Cl. 260-29.6

Nakayama, Takeshi: *See—*
Miura, Tanetoshi; Koshikawa, Tsuneji; Nakano, Yasuaki; and Nakayama, Takeshi,3,581,192.

Nakayama, Toshio: *See—*
Ohi, Kunio; Inoue, Hideaki; Nakayama, Toshio; and Ishii, Sosuke,3,581,245.

Nance, David. Method and apparatus for combatting aircraft fires. 3,580,339, Cl. 169-2.

Narco Scientific Industries, Inc.: *See—*
Visher, Wilbur A., 3,581,073.

Narita, Hiroshi: *See—*
Tsuboi, Takashi; and Narita, Hiroshi,3,581,172.

Narumiya, Tsuneaki: *See—*
Yoshimoto, Toshio; Narumiya, Tsuneaki; Kaneko, Seiya; Yoshii, Hiroshi; and Takamatsu, Tetsuya,3,580,897.

Naske, Christoph, to WHB-Anbaumobel von Poschinger K.G. Connecting fixture. 3,580,535, Cl. 248-239.

Nasonov, Petr Yakovleivich: *See—*
Kononov, Mikhail Ivanovich; Krasheninnikov, Evgeny Anatolievich; Knyazev, Vladimir Fedorovich; Vasiliev, Evgeny Nikolaevich; Nasonov, Petr Yakovleivich; and Timofeev, Evgeny Petrovich,3,580,717.

National Catheter Corporation: *See—*
Jackson, Isaac S., 3,580,983.

National Distillers and Chemical Corporation: *See—*
Quackenbush, John J., 3,580,413.
Watson, Lloyd M.; and Birchall, William R., 3,580,862.

National Gypsum Company: *See—*
Shull, John D., Jr., 3,580,390.

National Industrial Manufacturing: *See—*
Baker, Edward D., 3,580,164.

National Research Development Corporation: *See—*
Brown, Kenneth William; and Balchin, Nigel C., 3,581,050.
Brown, Kenneth William, 3,581,051.
Firth, Donald; Hancock, Roger Harvey Yorke; and McCallum, James, 3,579,988.

National Research Developmnet Corporation: *See—*
Hobbs, Peter Alfred, 3,580,417.

Nauchno-Issledovatelsky Institut Monomerov Dlya Sinteticheskogo: *See—*
Bodnarjuk, Frizian Nikolaevich; and Korshunov, Mikhail Alexeevich, 3,580,918.

Naumenko, Viktor Arsenievich; Torortseva, Tatiana Nikolaevna; Penkova, Lidia Fedorovna; Vyselkov, Andrei Akimovich; and Rogova, Galina Ivanovna. Separator-electrolyte carrier for primary cells. 3,580,742, Cl. 136-155.

Navcor, Inc.: *See—*
Jones, John Paul, Jr., 3,580,495.

Naydan, Bob N.: *See—*
Paradise, Ronald Y.; Masel, Marvin; Naydan, Bob N.; and Brinkman, John D.,3,581,304.

Nearman, Richard E., to Automated Handling Systems, Inc. Trolley and hanger apparatus. 3,580,183, Cl. 104-111.

Nearman, Richard E., to Eaton Yale & Towne Inc. Signal disabling device. 3,580,382, Cl. 198-38.

Nebelsiek, Hilbert J.: *See—*
Ginsburgh, Irwin; and Nebelsiek, Hilbert J.,3,580,414.

Nederlandse Organisatie voor Toegepost- Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid, Handle en Verkeer: *See—*
Van Staveren, Pieter, 3,580,356.

Nedschroef Octrooi Maatschappij N.V.: *See—*
Van de Meerendonk, Gerardus Cornelis, 3,579,685.

Neeff, Teodorico. Photoelectric bubble meter for checking gas- tight containers and the like. 3,581,101, Cl. 250-218.

Neema, Farid J.; and Engelhardt, Robert C., to Honeywell Inc. Keyboard to memory peripheral device. 3,581,285, Cl. 340-172.5

Neild, Donald William, to General Electric Company Limited, The. Counting device including an escapement with no automatic return bias. 3,580,496, Cl. 235-92.

Nejame, Samuel, Jr.; Kondel, George C.; and De Santis, Italo J., to Damon Corporation, mesne. Continuous flow liquid distributing system. 3,580,301, Cl. 141-131.

Nelson, Harold E., Jr., to Rohr Corporation. Thrust reversing apparatus for jet-propelled aircraft. 3,579,991, Cl. 60-232.

Nelson, William E.: *See—*
Kennedy, Garth P.; and Nelson, William E.,3,580,420.

Nercessian, Sarkis, to Forbro Design Corporation. Bipolar operational power supply. 3,581,224, Cl. 330-99.

Netzer, Theodor Karl: *See—*
Trinks, Walter; Netzer, Theodor Karl; Victora, Hans T.; Saurer, Hermann; and von Paulgerg, Heinrich,3,580,048.

Neutron Products, Inc.: *See—*
Ransohoff, Jackson A.; and Hairston, James J., Jr., 3,581,095.

Newman, La Verne R., to Essex International, Inc. Vehicle light control and warning indicator system. 3,581,276, Cl. 340-52.

Newman, Stanley F.: *See—*
Hoory, Sadok E.; Newman, Stanley F.; and Vincent, Robert E.,3,580,819.

Newton, Augustus L. Receptacle disposal container adapter. 3,580,408, Cl. 214-302.

Nichiel Denki Sangyo K.K.: *See—*
Makino, Tomio, 3,581,055.

Nichols, Gordon E., to Winthrop-Atkins Co., Inc. Slant front easel. 3,580,536, Cl. 248-459.

Nicklas, James P.: *See—*
Martin, Francis C.; and Nicklas, James P.,3,581,281.

Nicolin, Andre J., to L'Equipment par l'Acier Inoxydable (Equipinox). Means for attaching a detachable handle for kitchen utensil vessels. 3,579,711, Cl. 16-114.

Nider, William K.: *See—*
Miller, Harold A.; Nider, William K.; and Zavialoff, Igor P.,3,579,718.

Nielsen, Einer Dale, to Signetics Corporation. Digital logic clamp for limiting power consumption of interface gate. 3,581,107, Cl. 307-215.

Nielsen, Erik Christian Valeur, to Bodenhoff, Max, A/S. Typewriter table. 3,580,652, Cl. 312-208.

Nielsen, Lawrence E.; and Fields, Joseph E., to Monsanto Company. Mica-reinforced composites. 3,580,882, Cl. 260-41.

Nielson, William L., to Monterey Mills, Inc. Toilet tank cover. 3,579,647, Cl. 4-1.

Niepmann, Otto, to Maschinenfabrik Fr. Niepmann & Co. Web winding machines. 3,580,757, Cl. 156-504.

Nilson, Carl-Goran: *See—*
Schnittger, Jan R.; Nilson, Carl-Goran; and Larsson, Bengt D. R.,3,580,492.

Nilsson, Oake Valentin: *See—*
Olsson, Tore Bertil Reinhold; and Nilsson, Oake Valentin,3,581,109.
Nippert, Charles R.: *See—*
Merrill, Neal W.; and Nippert, Charles R.,3,580,023.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Amano, Hiroshi, 3,580,979.
Nippon Kokan Kabushikikaisha: *See—*
Kanzaki, Fumiaki; Kozakura, Yoshio; Akahide, Kozo; and Suzuki, Tamotu, 3,581,039.
Nippon Steel Corporation: *See—*
Tsujihata, Keiji; Shimada, Masatoshi; Asai, Hiromi; Sawada, Yasuhiro; and Ayuha, Zensaku, 3,581,070.
Nippon Tungsten Compar y, Ltd.: *See—*
Ogawa, Kazuki; and Miyahara, Michito, 3,580,708.
Nischk, Gunther: *See—*
Engelhard, Helmut; Bentz, Francis; Rinkler, Heinrich; and Nischk, Gunther,3,580,966.
Nishimura, Akihiro, to Dow Badische Company. Dyeable pill-resistant polyesters. 3,580,874, Cl. 260-22.
Nishimura, Takeshi: *See—*
Hibi, Masao; and Nishimura, Takeshi,3,581,097.
Nishino, Motohisa: *See—*
Matsumoto, Masamiki; Nishino, Motohisa; and Tanaka, Yoshimasa,3,579,824.
Niskovskikh, Vitaly Maximovich: *See—*
Khimich, Georgy Lukich; Niskovskikh, Vitaly Maximovich; Varaxin, Alexei Ivanovich; Gelfenbein, Evgeny Jukhimovich; Bykov, Leonid Alexandrovich; Litvinov, Anatoly Ivanovich; and Karlinsky, Stanislav Evgenievich,3,580,327.
Nisshin Kasai Kabushiki Kaisha: *See—*
Yamamura, Katsumi; Miyasaka, Tsugumitsu; Hayashi, Shinichi; Yamamoto, Masao; and Matsubara, Yukio, 3,580,820.
Nittai Lease Company Ltd.: *See—*
Tomizawa, Kazuhiro, 3,580,093.
Noiles, Douglas G. TV on time control. 3,581,029, Cl. 200-38.
Nolan, George J.; and Holm, Vernon C. F., to Phillips Petroleum Company. Dehydrogenation of olefins. 3,580,969, Cl. 260-666.
Nomiya, Kosei: *See—*
Hatsukano, Yoshikazu; and Nomiya, Kosei,3,581,065.
Nonnenmacher, Friedrich Karl, to Metallgesellschaft Aktiengesellschaft. Screw conveyor. 3,580,389, Cl. 198-213.
Noonan, Michael F.; and Fisher, James J. Football field area identification means. 3,580,573, Cl. 273-55.
Nord, Hans H., to Western Union Telegraph Company, The. Schmitt trigger circuit with variable hysteresis and insensitivity to temperature change. 3,581,120, Cl. 307-290.
Nordland, George W. Golf cart bag securement apparatus. 3,580,533, Cl. 248-96.
Norell, John R., to Phillips Petroleum Company. Substituted 2-aminomalonamides production. 3,580,967, Cl. 260-557.
North American Rockwell Corporation: *See—*
Polkinghorn, Robert W., 3,581,292.
Northrop Carolina, Inc.: *See—*
Caneer, Ralph A.; Anderson, William J.; Morgan, Bert B.; and Goodman, Jerry M., 3,579,760.
Northrop Corporation: *See—*
Vogel, Alvin R.; Moore, Douglas A.; Folan, Martin P.; and Buck, John R., 3,581,014.
Northrop, Walter A. Bumper combining hitch and step. 3,580,613, Cl. 280-500.
Northwood, John Lenard: *See—*
Ranby, Peter Whitten; and Northwood, John Lenard,3,580,738.
Norton Company: *See—*
Coes, Loring, Jr., 3,579,927.
Densmore, William P., 3,579,925.
Herbert, David B.; and Barney, Ronald N., 3,580,322.
Noyes, Theodore A. Vacuum support for animals. 3,580,221, Cl. 119-96.
Nuclear-Chicago Corporation: *See—*
Peoples, Joseph T.; and Landry, Charles C., 3,581,106.
Nueman, William H.; and Repella, James A., to Federal-Mogul Corporation. Seal testing device. 3,580,061, Cl. 73-88.
Numa, Yoshiaki; Nakamachi, Akio; and Murakami, Yasukazu, to Daicel Ltd. Process for producing pyridine bases. 3,580,917, Cl. 260-290.
Numakura, Toshihiko, to Sony Corporation. Recording and reproducing system for color video signals. 3,580,990, Cl. 178-5.2
Numao, Mitsuru: *See—*
Kashahara, Toshio; and Numao, Mitsuru,3,580,756.
Nunes, John F., Jr. Sod handling machine. 3,580,375, Cl. 198-8.
N.V. Machinefabriek L. Te Strake: *See—*
Fransen, Theodorus, 3,580,293.
Van Mullekom, Hubert P., 3,580,444.
Nymeyer, Frederick. Auction market computation system. 3,581,072, Cl. 235-152.
Oak Electro/netics Corporation: *See—*
Meyer, Walter, 3,581,023.
Meyer, Walter, 3,581,024.
Ober, Horgern: *See—*
Fichtner, Rudi; Ober, Horgern; and Klein, Wilhelm,3,579,691.
Oberkirch, Wolfgang: *See—*
Gunther, Peter; Oberkirch, Wolfgang; and Pampus, Gottfried,3,580,892.
O'Brien, Edward D., to Stauffer Chemical Company. Apparatus for agglomerating dusts and the like. 3,580,545, Cl. 259-3.
O'Brien, Jay Philip:*See—*
Gruenman, Vsevolod; Hoffer, Max; O'Brien, Jay Philip; Rachlin, Albert Israel; and Zbinden, Gerhard,3,580,949.
Occidental Petroleum Corporation: *See—*
Lofgreen, Earston Arthur, 3,580,196.
Ocean Science and Engineering, Inc.: *See—*
Jantzen, Robert J., 3,579,872.
Ocean Systems Incorporated: *See—*
Pilia, Frank J., 3,581,042.
Oerlikon-Buhrie Holding AG: *See—*
Lautenschlager, Alfred Johann, 3,579,803.
Oetiker, Hans. Compression band. 3,579,754, Cl. 24-279.
Oettinger, Joseph S. Shipping envelope. 3,580,489, Cl. 229-70.
Offenbroich, Adrian Gottfried. Fastening devices. 3,580,620, Cl. 287-54.
Office National d'Etudes et de Recherches Aerospatiales (par abreviation O.N.E.R.A.):*See—*
Daigne, Bernard M.; and Pelletier, Louis, 3,581,086.
Ogawa, Kazuki; and Miyahara, Michito, to Nippon Tungsten Company, Ltd. Method of forming cutting tool materials consisting of alumina and titanium carbide. 3,580,708, Cl. 51-307.
Ohi, Kunio; Inoue, Hideaki; Nakayama, Toshio; and Ishii, Sosuke, to Hitachi Electronics Co., Ltd. Microwave absorber for waveguide termination. 3,581,245, Cl. 333-22.
Ohlstein, Paul E., to United States of America, Navy. Squib-powered automatic inflation device. 3,579,964, Cl. 222-5.
Ohyama, Yasushi; and Miyazawa, Sadayuki, to Mitsubishi Paper Mills, Ltd. Photographic sensitized papers excellent in fluorescent brightening effect and process for preparing the same. 3,580,720, Cl. 96-82.
O'Keeffe, Trence W.:*See—*
Simon, Alan J.; Johnson, Joseph E.; and O'Keeffe, Trence W.,3,580,749.
Okuyama, Chiyoshi; and Osumi, Syuzo. Ferroelectric ceramic materials. 3,580,846, Cl. 252-62.9
Olaf Bendik Elmer: *See—*
Djenner, Richard, 3,581,056.
Olin Corporation: *See—*
Creith, Lou C., 3,581,049.
Dilday, Joseph T., 3,580,715.
Heinzel, Joseph A., 3,579,840.
Ramsay, Marcus; and Lilley, Arthur W., 3,580,113.
Olin Mathieson Chemical Corporation: *See—*
Churchill, John W.; Kober, Ehrenfreid H.; Scott, Peter H.; and Smith, Curtis P., 3,580,951.
Cooper, Roy M., 3,580,833.
Kuzma, John J.; and Gawrych, Robert I., 3,579,891.
Vartanian, Edwin S., 3,580,132.
Olmstead, Merlin E.: *See—*
Shear, Wayne G.; Everett, Samuel R.; and Olmstead, Merlin E.,3,581,309.
Olofson, Arne K. Backing ring centering device. 3,579,844, Cl. 33-180.
Olson, Birger H. Controlled release safety cleat. 3,580,209, Cl. 114-218.
Olsson, Tore Bertil Reinhold; and Nilsson, Oake Valentin, to Aktiebolaget Bofors. Circuit system for producing an output signal from a variable amplitude signal when the amplitude of said signal is within a selected range. 3,581,109, Cl. 307-235.
Olvey, James O., Sr. Bead-head fly with dangling spinner. 3,579,892, Cl. 43-42.11
Olympus Optical Company Limited: *See—*
Shigetomi, Sadao; and Saito, Shoichi, 3,581,022.
O'Mara, William H.; and Wood, Owen J., to Aerovox Corporation. Method of forming tubular mica capacitor. 3,579,770, Cl. 29-25.42
Omlin, Luc, to Centre Electronique Horloger S. A. Mounting device for flexion vibrators. 3,581,126, Cl. 310-9.1
Omron Tateisi Electronics Co.: *See—*
Asada, Takeo; and Kamiya, Toshihiro, 3,580,121.
Onishi, Akira; Anzai, Shiro; Irako, Koichi; Fujio, Ryota; Hayakawa, Yoshihiro; and Miyamoto, Shoji, to Bridgestone Tire Company Limited. Production of copolymers in the presence of an organolithium compound and an orthoester. 3,580,895, Cl. 260-83.7
Ootake, Heiichiro: *See—*
Shimodoi, Yutaka; Ootake, Heiichiro; Mihara, Kouichi; Takao, Kiyoshi; and Matsuda, Shogo,3,580,735.
Orlowski, Donald W.; and Schroeder, Donald S., to Ampex Corporation. Grommet for speaker enclosure. 3,580,988, Cl. 174-153.
Orn, Vernon B.; and Cook, Richard E. Artificial fish lure and method of making same. 3,579,895, Cl. 43-17.6
Oroza, August, to U.S. Divers. Oxygen generators. 3,580,250, Cl. 128-203.
Orshansky, Elias, Jr., to URS Systems Corporation. Transmission. 3,580,107, Cl. 74-687.
Osakeyhtio, A. Ahlstrom: *See—*
Makela, Aarne Olavi, 3,581,103.
Osborne, Brian G., to Mattel, Inc. Doll structure including appendage with fastener trapped therein for connecting to torso. 3,579,902, Cl. 46-149.
Ostrowsky, Efrem M.: *See—*
Heffernan, Bart T.; and Ostrowsky, Efrem M.,3,579,642.
Osumi, Syuzo: *See—*
Okuyama, Chiyoshi; and Osumi, Syuzo,3,580,846.

Otsukakoki Kabushiki Gaisha: *See—*
Yashiro, Katsuji; and Naito, Hiroshi, 3,580,104.

Ott, Robert E., to SCM Corporation. Food cooking apparatus having continuous cleaning properties and process for producing same. 3,580,733, Cl. 117-129.

Otto, Gunter: *See—*
Spieth, Rudolf; and Otto, Gunter,3,580,559.

Overend, Thomas F. Mud flaps for dump trucks. 3,580,604, Cl. 280-154.5

Ovitron Corporation: *See—*
Hughes, George T., 3,579,886.

Owens, Walter K. Commode flushing mechanism. 3,579,648, Cl. 4-52.

Owens-Illinois, Inc.: *See—*
Griffith, Edwin D., 3,580,464.
Mumford, Eustace H., 3,580,712.
Schirm, Helmut T.; and Zeigler, Robert O., 3,580,713.
Wilhelm, D F.; Miller, Peter S.; Bissell, D L.; and Lambroff, George M., 3,581,289.

Oxley, Gerald K.: *See—*
Jorgensen, Anker E.; and Oxley, Gerald K.,3,580,101.

Oy Wartsila AB: *See—*
Burmeister, Fred; Enkvist, Ernst; Johansson, Bengt; and Kostilainen, Valter, 3,580,204.

P'osser, David G., to Autotrol Corporation. Softener control assembly. 3,580,615, Cl. 285-81.

Pacciarini, Antonio; and Caretta, Renato, to Pirelli S.p.A. Method for manufacturing pneumatic tires. 3,580,766, Cl. 156-123.

Packaging Corporation of America: *See—*
Thelen, Edmund J.; and King, Robert H., 3,580,466.

Packaging Industries, Inc.: *See—*
Rohdin, Howard A.; and Brown, Fred P., Jr., 3,580,442.

Packard, Robert F., to Technical Metals, Inc. Production of elongated extrusions composed of titanium base metal. 3,579,800, Cl. 29-423.

Paget, John A., to United States of America, Atomic Energy Commission. Lifting mechanism and refueling machine. 3,580,804, Cl. 176-30.

Paielli, Michael F. Fifth wheel with load transferring device. 3,580,609, Cl. 280-405.

Palamarchuk, Vladimir Ivanovich: *See—*
Bushuev, Vladimir Pavlovich; Gubin, Georgy Viktorovich; Zolotarev, Petr Semenovich; Sorokin, Vladimir Andreevich; Palamarchuk, Vladimir Ivanovich; and Dmitrenko, Viktor Makarovich,3,580,554.

Pall (Canada) Ltd.: *See—*
Gaspari, Anthony Mario, 3,579,926.

Pallich, Adolf, to Zbrojovka, narodni podnik. Anesthetizing gun for use in slaughtering animals. 3,579,889, Cl. 42-1.

Palmer, Ansell W., to Honeywell Information Systems Inc. Record scanner with loading and indexing means. 3,581,064, Cl. 235-61.11

Pampus, Gottfried: *See—*
Gunther, Peter; Oberkirch, Wolfgang; and Pampus, Gottfried,3,580,892.

Panametrics, Inc.: *See—*
Brinkerhoff, Joris M.; Hunerwadel, Jean L.; and Sellers, Francis B., 3,581,087.
Lynnworth, Lawrence C., 3,580,058.

Pangalila, Frans V. A., to McMullen, John J., Associates, Inc. Method and means for mooring. 3,580,207, Cl. 114-144.

Panko, Walter B.; and Steindler, Julius P., to Engis Equipment Company. Universal clamp for abrasive tool. 3,579,912, Cl. 51-59.

Panschow, Rudolf; Russbuelt, Herbert; Suhr, Volker; and Ullmann, Werner, to AG fur Industrielle Elektronik AGIE. Digitally controlled electro-erosion machine. 3,581,045, Cl. 219-69.

Paquette, Raymond E., to Varo, Inc., mesne. High intensity light source with integral radiant energy coupling apparatus. 3,581,140, Cl. 313-110.

Paradise, Ronald Y.; Masel, Marvin; Naydan, Bob N.; and Brinkman, John D., to Singer-General Precision, Inc. Analog-to-digital cyclic forward feed successive approximation conversion equipment. 3,581,304, Cl. 340-347.

Parechoc S.A.: *See—*
Meylan-Rochat, Andre, 3,579,977.

Park, William G.: *See—*
Arvidson, Paul W.; Park, William G.; and Williams, Keith S.,3,580,130.

Parke, Davis & Company: *See—*
Short, Franklin W., 3,580,926.

Parker, Phillip H., to Chevron Research Company. Method for making corrugated thermoplastic articles. 3,580,769, Cl. 156-206.

Parks, John C.: *See—*
Bean, Dennis P.; and Parks, John C.,3,580,030.

Parr, Leslie R.: *See—*
Boot, Herbert W.; Parr, Leslie R.; and Fudger, Shirley L. W.,3,579,695.

Parran, John J., Jr., to Procter & Gamble Company, The. Detergent compositions containing particle deposition enhancing agents. 3,580,853, Cl. 252-152.

Patchett, Arthur A.; and Hannah, John, to Merck & Co., Inc.5β-Taurocholenic acids and 5β-taurocholadienic acids. 3,580,936, Cl. 260-397.

Patelhold Patentverwertungs-&-Elektro-Holding AG: *See—*
Kach, Alfred, 3,581,311.

Pavelle Corporation, The: *See—*
Aston, Keith, 3,581,062.

Pavonet, Engelhard, to Fosindus Company. Process for the purification of residual gypsum formed in the manufacture of phosphoric acid by the action of sulphuric acid on natural phosphates. 3,580,703, Cl. 23-122.

Payne, Arthur Albert, to Girling Limited. Tool for use with disc brakes. 3,580,544, Cl. 254-131.

Payseure, Lawrence A., to Chesapeake and Ohio Railway Company, The, and Baltimore and Ohio, Railroad Company, The. Train length measuring device. 3,581,071, Cl. 235-151.32

Pearce, Christopher A.; and Lloyd, Norman C., to Midland Silicones Limited. Aminocyclotetrasilozanes. 3,580,941, Cl. 260-448.2

Pearl, Curtis F.: *See—*
Batlas, George X., 3,580,510.

Pearsall, Denton; and Jankowitz, Gerald, to Barnes Engineering Company. Pyroelectric detector array. 3,581,092, Cl. 250-83.3

Pearson, Arthur W. Trailer hitch. 3,580,612, Cl. 280-492.

Pedersen, Erik J. Automatic hanger discharge. 3,580,378, Cl. 198-25.

Pederson, Arthur M., to United States of America, Navy, mesne. Frequency to binary converter. 3,581,069, Cl. 235-92.

Pedrazzoli, Andrea; and Dall'Asta, Leone,to Societe d'Etudes de Recherches et d'Application Scientifiques et Medicales E.R.A.S.M.E. Derivatives of N-methylpiperazine. 3,580,914, Cl. 260-268.

Peeler, Robert L.: *See—*
Furby, Neal W.; Godfrey, Douglas; and Peeler, Robert L.,3,580,848.

Pelenc, Yves J.; and Bernard, Georges M., to Merlin Gerin, Societe Anonyme. Devices for the electro-optical measurement of an electrical quantity. 3,581,202, Cl. 324-96.

Pelletier, Louis: *See—*
Daigne, Bernard M.; and Pelletier, Louis,3,581,086.

Penkova, Lidia Fedorovna: *See—*
Naumenko, Viktor Arsenievich; Torortseva, Tatiana Nikolaevna; Penkova, Lidia Fedorovna; Vyselkov, Andrei Akimovich; and Rogova, Galina Ivanovna,3,580,742.

Pennwalt Corporation: *See—*
Bafford, Richard Anthony, 3,580,955.

Penstar Industries, Inc.: *See—*
Arnould, Marcel M.; Ward, John C., Jr.; Ray, William Floyd; and Budzyn, Boleslaw L., 3,580,386.

Peonski, Edward, to American Gage & Machinery Company. Gage with variable response amplifier. 3,579,843, Cl. 33-147.

Peoples, Joseph T.; and Landry, Charles C., to Nuclear-Chicago Corporation. Graded plane, high voltage DC power supply. 3,581,106, Cl. 307-150.

Pepe, Frank W. Tool for removing concentric knockouts. 3,579,797, Cl. 29-267.

Perfection Manufacturing Company, The: *See—*
Allina, Stanley F., 3,579,966.

Perhacs, Leslie, Jr., to Cragstan Industries, Inc. Kaleidoscope pull-toy construction. 3,579,901, Cl. 46-103.

Perilstein, Warren L., to Ethyl Corporation. Process for preparing overbased barium sulfonates, products therefrom and use in distillate fuel oils. 3,580,707, Cl. 44-51.

Perkin, Richard S., to Perkin-Elmer Corporation, The. Solar spectrographs. 3,580,679, Cl. 356-76.

Perkin-Elmer Corporation, The: *See—*
Perkin, Richard S., 3,580,679.

Perkins, Carroll R.; Shaffstall, Everett L.; Gundersen, James L.; and Yoder, Robert N., to Hughes Aircraft Company. Differential amplifier circuit using field effect transistors. 3,581,226, Cl. 330-30.

Perkins, Earl Stuart, to Butler National Corporation. Full data altimeter display. 3,580,080, Cl. 73-384.

Perret, Henri: *See—*
Dubost, Pierre J.; and Perret, Henri,3,579,875.

Person, Herman R., to Dale Electronics, Inc. Method of creating variable electrical resistance and means for creating the same. 3,581,264, Cl. 338-20.

Perthen, Johannes; Gerighausen, Werner; Kunzmann, Konrad; and Dreyer, Heinz, said Gerighausen, said Kunzmann and said Dreyer assors to said Perthen. Surface measuring device. 3,580,062, Cl. 73-105.

Pest, Jurgen, to General Electric Company. Circuit for providing inductive impedance. 3,581,123, Cl. 307-304.

Peters, Theodore F., to General Motors Corporation. Latch mechanism. 3,580,623, Cl. 292-201.

Petersen, Paul S., to Rosemount Engineering Company. Moire fringe producing device used for interception course indication. 3,581,275, Cl. 340-25.

Petersen, Rudolph S., to Sanders Associates, Inc. Control valve. 3,580,281, Cl. 137-596.16

Peterson, Dana. Protractor. 3,579,841, Cl. 33-75.

Peterson, John R., to Kaiser Aluminum & Chemical Corporation. Electrolytic reduction cell. 3,580,835, Cl. 204-243.

Petterson, Tor: *See—*
Spencer, Lloyd; and Petterson, Tor,3,580,091.

Pettersson, Karl-Olof: *See—*
Regebro, Ebbe Torsten Leonard; and Pettersson, Karl-Olof,3,579,666.

Pettibone Corporation: *See—*
Hall, Frank B., 3,581,157.

Pettit, Carl S. Condition responsive automatic dialing apparatus. 3,581,021, Cl. 179-90.

Peyser, Leonard F.; and Bavor, Gordon F., to Machlett Laboratories, Incorporated, The. X-ray apparatus. 3,581,094, Cl. 250-105.

Pfander, Hans; Schilling, Harald; and Schwabe, Gerhard, to International Telephone and Telegraph Corporation. Junction capacitance component, especially for a monolithic microcircuit. 3,581,164, Cl. 317-234.

Pfarrwaller, Erwin, to Sulzer Brothers Limited. Coupling. 3,580,011, Cl. 64-27.

Pfister, Stanley A., to Cincinnati Milacron Inc. Machine tool. 3,579,812, Cl. 29-568.

Pfizer Inc.: *See—*
Butler, Kenneth, 3,580,908.
Cameron, Donald P., 3,580,921.

Pfrehm, Raymond H., to Esso Research and Engineering Company. Meter prover. 3,580,045, Cl. 73-3.

Pharmacia AB: *See—*
De Belder, Anthony N.; and Lindberg, Bernt J., 3,580,903.

Phelps Dodge Copper Products Corporation: *See—*
Mattil, Howard F., 3,580,024.

Philadelphia Quartz Company of California: *See—*
Murray, William Bruce; and Wright, Roy E., 3,580,934.

Philamon Incorporated: *See—*
Grib, Boris F., 3,581,130.

Philco-Ford Corporation: *See—*
Bar-On, Ari; and Emslie, Norman M., 3,580,064.
Morris, William J., 3,580,650.

Philipps, Virgil, to Federal Auto Products Co., Inc. Dispensing valve for a sealed pressurized container. 3,580,424, Cl. 222-89.

Phillips, Bryce W., to Reynolds Metals Company. Method of and apparatus for orienting indicia bearing cylindrical objects. 3,580,380, Cl. 198-33.

Phillips Petroleum Company: *See—*
Boultinghouse, Harold D., 3,580,761.
Meldau, Robert F., 3,580,336.
Nolan, George J.; and Holm, Vernon C. F., 3,580,969.
Norell, John R., 3,580,967.
Reid, Richard K.; and Welty, Richard O., 3,579,728.

Photovolt Corporation: *See—*
Schulkind, Herbert, 3,580,683.

Piazza, Gian-Franco; Streit, Rudolf; Ulrich, Martin; Laber, Werner; Burkert, Adolf; Tron, Manfred; and Waluga, Wolfgang, to Autophon Aktiengesellschaft. Character indicator with means for monitoring the correct positioning. 3,581,183, Cl. 318-696.

Piccoli, Mario, to Somet S.p.A. Societa Meccanica Tessile. Filling carrier for use in shuttleless looms. 3,580,291, Cl. 139-122.

Piccone, Dante E.; and Rosser, Daniel B., to General Electric Company. Semiconductor rectifier assembly having high explosion rating. 3,581,160, Cl. 317-234.

Pickup, John; Brandts, Theodorus G.; and Lichtenberger, Joseph A., to Consolidated Paper (Bahamas) Limited. Colorimetric indicators for determining pH of motor oil. 3,580,704, Cl. 23-230.

Piechota, Helmut: *See—*
Diehr, Hans Joachim; Merten, Rudolf; Piechota, Helmut; and Uhlig, Konrad,3,580,868.
Ware, Gordon K.; Diehr, Hans Joachim; Merten, Rudolf; Piechota, Helmut; and Uhlig, Konrad,3,580,890.

Pierard, Arthur E.: *See—*
Cardwell, Lonnie D.; Esenwein, Fred T.; and Pierard, Arthur E.,3,580,049.

Pierce, Harold C. Carloading box spacers. 3,580,186, Cl. 105-369.

Pierce, Paul W. Beehive. 3,579,676, Cl. 6-2.

Pierie, Charles G. Door return and check mechanism. 3,579,709, Cl. 16-65.

Pierson, Karl B.: *See—*
Hanson, John R.; and Pierson, Karl B.,3,580,275.

Pieszak, Franklin B.; and Knaggs, Marvin G., to Carroll Plastics Corporation. Carburetor package. 3,580,467, Cl. 229-14.

Pietsch, Raymond L., to Engineered Products Company, The. Magnetic door catch with riser. 3,579,934, Cl. 49-394.

Pilarski, Anthony J.: *See—*
Gurrieri, Salvatore J., 3,579,657.

Pilia, Frank J., to Ocean Systems Incorporated. Underwater welding method. 3,581,042, Cl. 219-61.

Pingree, Robert J., to Ameron, Inc., mesne. Material feeding apparatus. 3,580,384, Cl. 198-64.

Piper, John; and Leitten, Carl F., Jr., to Union Carbide Corporation. Solid electrolyte capacitor having improved counterelectrode system. 3,581,159, Cl. 317-230.

Pirelli Societa per Azioni: *See—*
Priaroggia, Paolo Gazzana, 3,580,987.

Pirelli S.p.A.: *See—*
Pacciarini, Antonio; and Caretta, Renato, 3,580,766.

Pitidis, Nicola: *See—*
Dal Monte, Giorgio; and Pitidis, Nicola,3,581,008.

Plaat, C Lucas; and Linn, Donald F., to Goodrich, B. F., Company, The. Brake retractor resetting mechanism. 3,580,366, Cl. 188-196.

Placements Jean Paul Tanguay Ltee: *See—*
Tanguay, Jean Paul, 3,580,306.

Plawner, Moshe L.; Vento, Vincent R.; and Gordon, Abraham, to United States of America, Air Force. Hydraulic gimbal lock. 3,580,363, Cl. 188-74.

Pletscher, Theodor. Gebruder Pletscher Bicycle support. 3,580,607, Cl. 280-301.

Pliskin, William A.; and Taylor, James E., to International Business Machines Corporation. Method for detecting exposure of a base material through an overlying coating. 3,580,066, Cl. 73-150.

Plonsker, Harvey R.; Vaughn, Reuben F.; Lang, Felix C.; Aurich, Christoph W.; and Bowie, Philip A., to Maremont Corporation. Apparatus for yarn removal. 3,579,761, Cl. 28-19.

Plumat, Emile; and Duthoit, Jean, to Glaverbel, S.A. Apparatus for subdividing fluid mass into grains. 3,579,720, Cl. 18-2.5

Plumb, Frank J., to J-B-T Instruments, Inc. toggle switch. 3,581,033, Cl. 200-67.

Plummer, Calvin C. Heat radiator and burner with adjustable connection to gas supply line. 3,580,236, Cl. 126-59.5

Pneumatic Scale Corporation: *See—*
Trusselle, William H., 3,580,298.

Podgorski, Theodore J., to Honeywell Inc. Adjustable, thin membrane mirror for use in the stabilization of ring lasers. 3,581,227, Cl. 331-94.5

Polkinghorn, Robert W., to North American Rockwell Corporation. Read/write memory circuit. 3,581,292, Cl. 340-173.

Pollitzer, Ernest L., to Universal Oil Products Company. Hydrorefining of coke-forming hydrocarbon distillates. 3,580,837, Cl. 208-57.

Pollmeier, Heinz; and Witthuhn, Johann, to Klebetechnik GmbH. Apparatus for the automatic wrapping of rotatable bodies. 3,580,790, Cl. 156-521.

Polymer Corporation, The: *See—*
Endle, Joseph, 3,580,289.

Polytronic S. A.: *See—*
Scharz, Armin; and Scharz, Oskar, 3,580,579.

Pommer, Gunter: *See—*
Balle, Walter; and Pommer, Gunter,3,579,736.

Pontecorvo, Nicholas E. Apparatus for processing cheese curd into homogenous cheese. 3,580,161, Cl. 99-243.

Pontecorvo, Nicholas E. Cheese kneading apparatus. 3,580,162, Cl. 99-243.

Pope, Karl D., III; Morey, Thomas H.; and Tierney, Robert R. Sectional and longitudinally adjustable surfboard fin assembly. 3,579,681, Cl. 9-310.

Porsche, Dr.- Ing. H.c.F., K.G., Firma: *See—*
Strohm, Siegfried, 3,581,206.

Posey, John T.: *See—*
Preston, Walter George, 3,580,523.

Possis Machine Corporation: *See—*
Schuette, Thomas L.; Straub, Melvin J.; Dumas, Pierre; and Aurich, Peter F., 3,579,771.

Postmark Corporation: *See—*
Iverson, Peter B., 3,579,885.

Postmaster General, Her Majesty's:*See—*
Cosier, James Edwin Henry, 3,579,739.

Potter Instrument Company, Inc.: *See—*
Schoeneman, Robert E., 3,580,453.

Potz, Klaus: *See—*
Hennig, Fridolin; Kellner, Hans-Jurgen; Potz, Klaus; and Gotze, Christian,3,580,443.

Potzl, Friedrich, to U.S. Philips Corporation. Micro-wave tube cooling assembly. 3,581,251, Cl. 333-83.

Powell, Alfred H.Electrician's tool for longitudinally and circumferentially cutting insulation on wire. 3,579,825, Cl. 30-90.7

Powell, James C., to All-Steel Equipment Inc. Apparatus for making knock-outs in electrical boxes formed of plastic material. 3,580,122, Cl. 83-108.

Powell, Jonathan S. Means for securing couplings to pipe. 3,579,794, Cl. 29-237.

Powell, Patrick L., to Stewart-Warner Corporation. Tamper prevention apparatus for odometer. 3,580,497, Cl. 235-96.

Power Industries Limited: *See—*
Sparks, Derick A., 3,580,450.

Powers Regulator Company: *See—*
Duchek, Ernest J., 3,580,502.
Sherman, Russell G.; and Koenig, Robert P., 3,580,272.

Powers, Samuel T.: *See—*
Coffey, H. Franklin; and Powers, Samuel T.,3,580,591.

PPG Industries, Inc.: *See—*
Hartzell, Rowland S.; and Gerek, Gene, 3,580,777.

Prasse, Herbert F.; and Hensley, Loyd D., to Ramsey Corporation. Circumferentially expanding oil control ring. 3,580,589, Cl. 277-140.

Precision Processes (Textiles) Limited: *See—*
Wray, Dennis; and Johnson, Janet M., 3,580,701.

Presta, Eugene A.: *See—*
Hammond, Robert A.; and Presta, Eugene A.,3,580,998.

Preston, Walter George, to Posey, John T. Retractable safety belt for hospital gurneys and the like. 3,580,523, Cl. 242-107.1

Preus, Paul; and Rosendahl, charles E. Barrier for control of substances in bodies of water. 3,579,994, Cl. 61-1.

Priaroggia, Paolo Gazzana, to Pirelli Societa per Azioni. Electric cable. 3,580,987, Cl. 174-120.

Price, Glenn R.; and Walsh, Edward N., to Stauffer Chemical Company. Phosphorylated heterocyclic compounds. 3,580,922, Cl. 260-304.

Price, John A.: *See—*
Stewart, Mary J.; and Price, John A.,3,580,886.

Price, Martin B.: *See—*
McAndrew, Francis B.; Price, Martin B.; and Berardinelli, Frank M.,3,580,928.

Price, Ralph E., to Landis Tool Company. Work driving device. 3,579,914, Cl. 51-101.

Priessnetz, Edmund F., to Electronic Transmission Systems, Inc. Magnetic holding drum. 3,581,257, Cl. 335-285.

Procter & Gamble Company, The: *See—*
Darragh, Richard T.; and Succo, John A., 3,580,729.
Fanta, Wayne I.; and Erman, William F., 3,580,953.
Fanta, Wayne I.; and Erman, William F., 3,580,954.
Parran, John J., Jr., 3,580,853.

Provost, Emile L.; and Tomasello, Antonio, to Gellman Industries, Inc. Container magazine for dispensing labels. 3,580,474, Cl. 229-20.

Pryor, Dale H., to Youngstown Sheet and Tube Company. Pipe-gripping apparatus. 3,579,753, Cl. 24-263.

Psychological Corporation, The: *See—*
Bennett, George K.; and Buchanan, Richard G., 3,579,870.

Pullen, Robert K. Packed snow and ice remover for highways and the like. 3,580,638, Cl. 299-25.

Pullman Incorporated: *See—*
Nagy, Ernest J., 3,580,642.

Purex Corporation, Ltd.: *See—*
Benham, Ralph E., 3,580,504.

Push, Raymond C., to Lear Siegler, Inc. Reclining forward folding seat. 3,580,635, Cl. 297-355.

Putnam, Peter A.: *See—*
Stevens, Roger L.; Putnam, Peter A.; and Sicona, Martin,3,581,017.

Quackenbush, John J., to National Distillers and Chemical Corporation. Clear thermoplastic multi-ply meat tray and absorbent strips. 3,580,413, Cl. 220-83.

Quebec North Shore Paper Company: *See—*
Hamilton, Douglas D., 3,580,308.

Quick, Lester K. Central refrigeration system with automatic standby compressor capacity. 3,580,006, Cl. 62-196.

Quillevere, Herve Alain: *See—*
Caruel, Jacques Emile Jules; Quillevere, Herve Alain; and Bauger, Louis,3,579,983.

Quinn, Frederic R., to Zyrotron Industries, Inc. Modulating valve construction. 3,580,500, Cl. 236-12.

Rachlin, Albert Israel: *See—*
Gruenman, Vsevolod; Hoffer, Max; O'Brien, Jay Philip; Rachlin, Albert Israel; and Zbinden, Gerhard,3,580,949.

Radecki, Tony, to Rain Bird Sprinkler Mfg. Corporation. Distance selector for sprinklers. 3,580,514, Cl. 239-521.

Rademacher, Leo E., to Monsanto Company. Vinyl halide graft polymers. 3,580,975, Cl. 260-878.

Radford, James T.; and Mizrany, Ronald A. Aircraft, battery and battery-carrying means, wherein the conductive wires serve as manipulating wires. 3,579,905, Cl. 46-244.

Rain Bird Sprinkler Mfg. Corporation: *See—*
Beamer, John D., 3,580,507.
Costa, Robert B., 3,580,506.
Marandi, Ali; and Solomon, Kenneth H., 3,580,508.
Radecki, Tony, 3,580,514.

Rainer, Norman B., to Seekay Chemical Company. Water-insoluble, cross-linked polymeric reaction product of ethylene diamine and nitrilotriacetic acid or derivative. 3,580,891, Cl. 260-72.

Raisin, Jean-Pierre: *See—*
Voisin, Eugene; Raisin, Jean-Pierre; and Delair, Jean-Paul,3,580,012.

Rambousek, Zdenek, to Elitex, Zavody textilniho strojirenstvi. Apparatus and method for positioning warp sheds. 3,580,292, Cl. 139-190.

Ramsay, Marcus; and Lilley, Arthur W., to Olin Corporation. Electrical ignition firearm with a forwardly sliding barrel. 3,580,113, Cl. 42-84.

Ramseier, Serge, to Battelle Development Corporation, The. Motion converting mechanism. 3,580,089, Cl. 74-49.

Ramsey Corporation: *See—*
Prasse, Herbert F.; and Hensley, Loyd D., 3,580,589.

Ramsey, Edward L., Jr.: *See—*
Frey, Dean R.; Hone, George L.; and Ramsey, Edward L., Jr.,3,581,269.

Ramsey, Hubert J.: *See—*
Ingraham, Robert C.; and Ramsey, Hubert J.,3,579,816.

Ranby, Peter Whitten; and Northwood, John Lenard, to Thorn Electrical Industries Limited. Plastics materials with conductive surfaces. 3,580,738, Cl. 117-215.

Ransdell, Bill J. Smoothly acting signal comparator. 3,581,218, Cl. 328-146.

Ransohoff, Jackson A.; and Hairston, James J., Jr., to Neutron Products, Inc. Source plaque for an irradiation chamber of curvilinear cross section. 3,581,095, Cl. 250-106.

Rantala, Charles W., to General Motors Corporation. Rocker molding installation. 3,580,628, Cl. 296-1.

Rapidograph, Inc.: *See—*
Riepe, Helmuth, 3,580,689.

Rapinat, Michel, to L'Air Liquide, Societe Anonyme pour l'Etude et L'Exploitation des Procedes George Claude. Cryopumping installations with high flow-rates. 3,579,997, Cl. 62-55.5

Rasmussen, Robert F., to Honeywell Inc. Control apparatus. 3,580,139, Cl. 91-411.

Rasworschegg, Heinrich; Markow, Demeter; and Sandri, Alfred, to Waagner-Biro Aktiengesellschaft. Method for the utilization of hot waste gases from furnaces of metallurgical works. 3,580,718, Cl. 75-60.

Rathbun, William H., to General Electric Company. Gas-blast circuit interrupter with magnetic means for accelerating merger of series-related arcs. 3,581,035, Cl. 200-148.

Rathje, Ove: *See—*
Andersen, Ole Stig; and Rathje, Ove,3,580,694.

Raupach, Friedrich. Electro-magnetic wiring system of interlinked coils particularly suitable in a current transformer for high voltages. 3,581,258, Cl. 336-173.

Rauterkus, Karl Josef; and Vollmann, Hansjorg, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the manufacture of polymer dispersions with positive zeta potential. 3,580,871, Cl. 260-17.

Raval, Jean Ernest Paul. Wrist band. 3,580,438, Cl. 224-4.

Raven Electronics Corporation: *See—*
Raven, Richard C., 3,580,581.

Raven, Richard C., to Raven Electronics Corporation. Probability generating system and game for use therewith. 3,580,581, Cl. 273-138.

Ray, William Floyd: *See—*
Arnould, Marcel M.; Ward, John C., Jr.; Ray, William Floyd; and Budzyn, Boleslaw L.,3,580,386.

Raychem Corporation: *See—*
Lanza, Vincent L., 3,580,829.

RCA Corporation: *See—*
Dodds, Wellesley Jamison, 3,581,002.
Klensch, Richard J., 3,580,995.
Smith, William Irving, 3,581,244.
Wheatley, William Richard, 3,581,162.

Realistic Company, The: *See—*
Gilman, John M., 3,580,423.

Reddel, Robert J.; and Brauner, Edward J., to Ledex, Inc. Tone decoder responsive to combined tones. 3,581,283, Cl. 340-171.

Reddy, Thomas Bradley, to American Cyanamid Company. Electrodeposition of lithium. 3,580,828, Cl. 204-14.

Redeco, Inc.: *See—*
Schwartz, Ralph E., 3,579,999.

Reed, Charles C., Jr. Crown and bridge remover. 3,579,834, Cl. 32-43.

Rees, Herbert, to Husky Manufacturing and Tool Works Ltd. Mechanism for closing and opening injection molds. 3,579,740, Cl. 18-30.

Reese, Larrie S., to Logistics Industries Corporation. Corner pad. 3,580,469, Cl. 229-14.

Regan, James L. Paint can rim piercer. 3,579,678, Cl. 7-14.1

Regan, James L. Explosive tendon tensioning means. 3,579,758, Cl. 25-118.

Regan, James L.; and Garnhart, David L., said Garnhart assor. to said Regan. System for erecting multi-storey buildings. 3,579,935, Cl. 52-126.

Regebro, Ebbe Torsten Leonard; and Pettersson, Karl-Olof. Swimming pool. 3,579,666, Cl. 4-172.19

Reich, Karl M., Maschinenfabrik: *See—*
Cast, Adolf; and Schwarz, Heinz, 3,580,455.

Reid, Richard K.; and Welty, Richard O., to Phillips Petroleum Company. Polymer separation. 3,579,728, Cl. 18-12.

Reis, Robert D., to United Electric Controls Company. Piston valve. 3,580,280, Cl. 137-596.14

Reist, Walter, to Ferag, Fehr & Reist AG. Apparatus for opening folded articles, such as newspapers. 3,580,562, Cl. 270-54.

Reliance Electric and Engineering Company, The: *See—*
Seed, Aniese E., 3,580,095.

Reliance Electric Company: *See—*
Loshbough, Richard C., 3,580,376.

Renard, John J. Apparatus for erecting and forming initially collapsed cartons into containers. 3,580,144, Cl. 93-53.

Rental Equipment Manufacturing Corporation: *See—*
Thompson, David R., 3,579,702.

Renz, Werner: *See—*
Geymayer, Peter; Billenstein, Siegfried; and Renz, Werner,3,580,849.

Repella, James A.: *See—*
Nueman, William H.; and Repella, James A.,3,580,061.

Repsher, Robert W.: *See—*
Haft, Harry H.; and Repsher, Robert W.,3,581,139.

Resener, Baird E., to Amsted Industries Incorporated. Attachments for a flexible belt. 3,580,388, Cl. 198-198.

Restelli, Ronald E.: *See—*
Matt, Richard J.; and Restelli, Ronald E.,3,579,780.

Rester, Darryl C.: *See—*
Terrell, Kyle E.; and Rester, Darryl C.,3,580,341.

Revco Inc.: *See—*
Vermes, Roy E., 3,580,145.

Reynolds Metals Company: *See—*
Barker, Layle B., 3,579,665.
Cvacho, Daniel S.; and Fritchey, Edward H., 3,580,200.
Phillips, Bryce W., 3,580,380.
Witte, Richard F., 3,580,482.

Reynolds, R. J., Tobacco Company: *See—*
Bernasek, Edward; and Eaton, Calley Neil, 3,580,906.

Rhodes, David R., to Chevron Research Company. Electrolytic coulometer titration system. 3,580,832, Cl. 204-195.

Rhodes, Richard D., Jr.; and Flanagan, Kirby E. L., to Davidson Rubber Company, Inc. Microcellular polyurethane foams based on aromatic polyamines and propoxylated aniline. 3,580,869, Cl. 260-2.5

Rhone-Poulenc S.A.: *See—*
Ceyzeriat, Louis; Gaignon, Maurice; and Lefort, Marcel, 3,580,939.

Ribbentrop, Annemarie: *See—*
Thiel, Max; Kampe, Wolfgang; Stach, Kurt; Schaumann, Wolfgang; and Ribbentrop, Annemarie,3,580,910.
Thiel, Max; Stach, Kurt; Schaumann, Wolfgang; and Ribbentrop, Annemarie,3,580,907.

Ribner, Morris; and Hestad, Alfred M., to International Telephone and Telegraph Corporation. Ringing tone distribution circuits. 3,581,020, Cl. 179-84.

Riccius, Rolf: *See—*
Bock, Gerhard; Riccius, Rolf; Weitkamp, Gunter; and Wolf, Bernhard,3,580,531.

Richards, William R., to Textron Inc., mesne. Snowmobile track. 3,580,647, Cl. 305-35.

Richter, Cestmir, to Mez Machod, Narodni Podnik. Small electric motors for dental equipment or the like. 3,581,131, Cl. 310-58.

Richter, Eugene P., Jr. Nut harvester. 3,579,969, Cl. 56-328.

Richter, Herbert; Stock, David K.; Wech, Robert J.; Stock, David K.; and Wech, Robert J., to Windmoller & Holscher FMC Corporation. Apparatus for paper sacks manufacture Bag stack accumulating conveyor. 3,580,141, Cl. 93-33.

Rickard, Earl K.: *See—*
Blackburn, Samuel S., Jr.; and Rickard, Earl K.,3,580,226.

Rieder, Otto E., to General Impact Extrusions (Manufacturing) Ltd. Method for forming flash holes in cartridge cases. 3,579,767, Cl. 29-1.3

Riegel Paper Corporation: *See—*
Young, Chauncey, 3,580,483.

Riegel Textile Corporation: *See—*
Teed, Richard K.; and Klose, Karl W., 3,580,198.

Riepe, Helmuth, to Rapidograph, Inc., mesne. Tubular writing head for a tubular writing pen. 3,580,689, Cl. 401-258.

Riesenberg, James H., to Consolidated Packaging Machinery Corporation. Container filling machine. 3,580,302, Cl. 141-141.

Rieth, Lawrence E., to Stewart-Warner Corporation. Automotive license lamp assembly. 3,581,081, Cl. 240-8.3

Riley, Eugene D.: *See—*
Sagouspe, Jean; and Riley, Eugene D.,3,579,971.

Rinkler, Heinrich: *See—*
Engelhard, Helmut; Bentz, Francis; Rinkler, Heinrich; and Nischk, Gunther,3,580,966.

Ritter, Josef: *See—*
Gott, Hans; and Ritter, Josef,3,580,018.

Ritter, Thomas E.: *See—*
Hestad, Erling; Ritter, Thomas E.; and De Claire, Alton G., Jr.,3,580,352.

Roberge, Robert A. Inflatable toy dispenser. 3,580,303, Cl. 141-173.

Robert, Andre; Bourdon, Claude; and Le Goer, Jean Luc, to Etat Francais representa par le Ministre des Armees, Delegation Ministerielle pour l'Armement. Apparatus for automatically measuring the properties of elliptically polarized light. 3,580,681, Cl. 356-114.

Roberts, Warren A. Adaptors for use in tire changing and wheel balancing. 3,580,320, Cl. 157-1.24

Robertshaw Controls Company: *See—*
Chambers, William W., 3,581,061.

Robertson, George H., to Bell Telephone Laboratories, Incorporated. Fourier analyzer. 3,581,078, Cl. 235-193.

Robertson, James H. Horseshoe-shaped lifebuoy and method of making the same. 3,579,683, Cl. 9-340.

Robinson, Charles A., to Kamborian, Jacob S. Pincers assembly. 3,579,693, Cl. 12-14.5

Robinson, Kenneth: *See—*
Watson, John Thaxter; and Robinson, Kenneth,3,580,150.

Rocha, Octavio; and Cano, Serafin. Oscillating internal combustion engine. 3,580,228, Cl. 123-18.

Rochelt, Gunter. Desk frame. 3,579,887, Cl. 40-152.1

Rockwell-Standard Company: *See—*
Gage, Arthur F.; and Stamm, Alex F., 3,580,459.

Rode, Horst: *See—*
Rothfuss, Helmut; and Rode, Horst,3,580,985.

Rodionov, Kuzma Petrovich: *See—*
Beresnev, Boris Ivanovich; Bulychev, Dmitry Konstantinovich; Martynov, Evgeny Dmitrievich; Ryabinin, Jury Nikolaevich; Rodionov, Kuzma Petrovich; Maltsev, Mikhail Vasilievich; Britnev, Georgy Pavlovich; and Kocherov, Anatoly Vasilievich,3,580,019.

Rogers, William A.: *See—*
Gilbert, Edward I.; and Rogers, William A.,3,579,970.

Rogova, Galina Ivanovna: *See—*
Naumenko, Viktor Arsenievich; Torortseva, Tatiana Nikolaevna; Penkova, Lidia Fedorovna; Vyselkov, Andrei Akimovich; and Rogova, Galina Ivanovna,3,580,742.

Rohde, Robert P., to General Motors Corporation. Fluid power steering system with fluid pressure reserve. 3,579,984, Cl. 60-51.

Rohdin, Howard A.; and Brown, Fred P., Jr., to Packaging Industries, Inc. Method and apparatus for transferring articles and the like. 3,580,442, Cl. 225-2.

Rohm and Haas Company: *See—*
Dupre, Jean, 3,580,850.
Mickus, James C.; Fordyce, David B.; and Mansfield, Richard C., 3,580,855.

Rohr Corporation: *See—*
Nelson, Harold E., Jr., 3,579,991.
Tanner, Carole S.; and Tontini, Remo, 3,579,993.

Roman, Terrance S., to Cross Electronics, Inc., mesne. Optical pyrometers. 3,580,678, Cl. 356-43.

Romano, Paul, to Eastman Kodak Company. Apparatus for processing photographic materials. 3,581,058, Cl. 219-330.

Ronayne, John P.: *See—*
Harland, Geoffrey; and Ronayne, John P.,3,581,018.

Ronchetti, Ugo: *See—*
Colombo, Americo; and Ronchetti, Ugo,3,579,833.

Root, James R., to Ruskin Manufacturing Company. Smoke damper. 3,580,321, Cl. 160-1.

Ropp, Richard C., to Westinghouse Electric Corporation. Method of preparing rare-earth metal orthovanadate phosphors by precipitation. 3,580,861, Cl. 252-301.4

Roscoe, John D., to Bethlehem Steel Corporation. Safety shield for a fume-collecting apparatus. 3,580,556, Cl. 266-16.

Rosemount Engineering Company: *See—*
Petersen, Paul S., 3,581,275.

Rosen, Heinz: *See—*
Greenberg, Sol; Rosen, Heinz; Weinberger, Richard; and Mongodin, Guy,3,580,081.

Rosen, Milton K.; and Mason, Charles D., to Allied Chemical Corporation. Vapor phase polymerization of butene-1. 3,580,898, Cl. 260-93.7

Rosenberg, Sam: *See—*
Klempner, George R.; and Rosenberg, Sam,3,579,784.

Rosendahl, charles E.: *See—*
Preus, Paul; and Rosendahl, charles E.,3,579,994.

Rosner, Robert E., to McDonnell Douglas Corporation. Beaded injectable sealing composition. 3,580,870, Cl. 260-2.5

Ross, William D.: *See—*
Salyer, Ival O.; Jefferson Robert T.; and Ross, William D.,3,580,843.

Rosser, Daniel B.: *See—*
Piccone, Dante E.; and Rosser, Daniel B.,3,581,160.

Rotax Limited: *See—*
Goad, Albert, 3,580,098.

Roth, Albert L. Rectangular carton having sift-proof and squaring closure. 3,580,477, Cl. 229-39.

Rothe, Horst. Transistorized power amplifier. 3,581,225, Cl. 330-28.

Rothfuss, Helmut; and Rode, Horst, to Bunker-Ramo Corporation, The. Cable connector and means to manufacture same. 3,580,985, Cl. 174-68.5

Rouet, James; and Vignes, Roger, to Service National dit: Gaz de France. Gas operated water heater. 3,580,224, Cl. 122-16.

Royal Products Company: *See—*
Campbell, Albert B., 3,580,863.

Rozema, Arthur L.; Brady, Lynn J.; and Barden, Wayne A., to CTS Corporation. Method of making a resistor. 3,579,819, Cl. 29-610.

Rozhdestvenskayam, Maiya Konstantinovna: *See—*
Shenfil, Leonid Zalmanovich; Gul, Valentin Evgenievich; Melnikova, Galina Konstantinovna; Siprikova, Nina Isidorovna; Rozhdestvenskayam, Maiya Konstantinovna; and Kuzina, Alexandra Nikitichna,3,580,776.

Rozmus, Walter J., to Utica Tool Company, Inc. Wire stripping apparatus. 3,580,114, Cl. 81-9.5

Rudnitsky, Jury Petrovich: *See—*
Buzhinsky, Igor Mikhailovich; Zhabotinsky, Mark Efremovich; Rudnitsky, Jury Petrovich; Tsapkin, Vadim Vasilievich; Tsapkina, Irma Vyacheslavovna; and Ellert, Georgy Vladimirovich,3,580,859.

Ruegg, Ernst, to Wyss, Escher, Limited. Device for collecting solids in a centrifuge. 3,580,393, Cl. 210-369.

Ruehle, William H., to Mobil Oil Corporation. Frequency-domain band broadening of seismic data. 3,581,274, Cl. 340-15.5

Ruffner, Lawrence J.: *See—*
Veater, Donald J.; Hill, Sumner B.; and Ruffner, Lawrence J.,3,581,167.

Ruskin Manufacturing Company: *See—*
Root, James R., 3,580,321.

Russbuelt, Herbert: *See—*
Panschow, Rudolf; Russbuelt, Herbert; Suhr, Volker; and Ullmann, Werner,3,581,045.

Russell, Alexander; and Millar, Alastair Gordon. High speed absolute position controls. 3,581,180, Cl. 318-608.

Russo, Ronald D., to Koehler-Dayton, Inc. Self-contained sewerage system. 3,579,651, Cl. 4-78.

Ryabinin, Jury Nikolaevich: *See—*
Beresnev, Boris Ivanovich; Bulychev, Dmitry Konstantinovich; Martynov, Evgeny Dmitrievich; Ryabinin, Jury Nikolaevich; Rodionov, Kuzma Petrovich; Maltsev, Mikhail Vasilievich; Britnev, Georgy Pavlovich; and Kocherov, Anatoly Vasilievich,3,580,019.

Ryan, Donald P., to Cessna Aircraft Company, mesne. Card control of radio telephone. 3,581,019, Cl. 179-41.

Ryll, Paul A.: *See—*
Mandonas, Nicholas J.; and Ryll, Paul A.,3,579,922.

Saab Aktiebolag: *See—*
Eriksson, Gustave Ragnar, 3,580,685.

Sabin Machine Co.: *See—*
Jones, Charles E., 3,579,919.

Sacher, Franz, to Wiener Schwachstromwerke Gesellschaft m.b.H. Potentiometer circuit arrangement for deriving a tuning voltage. 3,581,252, Cl. 334-15.

S. A. C. M. I. Cooperativa Meccanici Imola Soc. Coop. A. R. L.: *See—*
Mingotti, Aurelio, 3,579,757.

Sagouspe, Jean; and Riley, Eugene D., to Genie Grape Harvester, Inc. Catch floor for grape harvesters. 3,579,971, Cl. 56-330.

Saito, Mataichi. Method for continuously grinding a drill tip end into a normal shape and into a split point. 3,579,924, Cl. 51-288.

Saito, Shoichi: *See—*
Shigetomi, Sadao; and Saito, Shoichi,3,581,022.

Sakamoto, Eiichi: *See—*
Sato, Shui; Sakazume, Kaiichiro; and Sakamoto, Eiichi,3,580,723.

Sakamoto, Kenro; Takahashi, Takao; Koitabashi, Takeo; and Fujiwara, Mitsuto, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide color photographic emulsion. 3,580,722, Cl. 96-100.

Sakazume, Kaiichiro: *See—*
Sato, Shui; Sakazume, Kaiichiro; and Sakamoto, Eiichi,3,580,723.
Sato, Shui; Sakazume, Kaiichiro; and Iytaka, Tateshi,3,580,724.

Salerni, John V.: *See—*
Dean, Michael R.; Castro, Luis F.; and Salerni, John V.,3,580,332.

Salim, Ehsan: *See—*
Ullmann, Werner; Tadini, Costantino; and Salim, Ehsan,3,581,043.

Salyer, Ival O.; Jefferson Robert T.; and Ross, William D., to Monsanto Research Corporation. Chromatographic medium and method. 3,580,843, Cl. 210-31.

Sambeth, Joerg: *See—*
Grundschober, Friedrich; and Sambeth, Joerg,3,580,218.

Sampson, Arnold, to Sampson Corporation, The. Pericortical dental implant and inserter therefor. 3,579,829, Cl. 32-10.

Sampson Corporation, The: *See—*
Sampson, Arnold, 3,579,829.

Sampson, Richard L., to Honeywell Inc. Fluid actuated instrument sensitive to densitity temperature or linear acceleration. 3,580,087, Cl. 73-515.

Samuels, Walter E. D., to Corning Glass Works. Fluidic character display device. 3,579,879, Cl. 40-28.

Sanders Associates, Inc.: *See—*
Greenspan, Lawrence E.; and Whitaker, Earl J., 3,581,287.
Petersen, Rudolph S., 3,580,281.

Sandorf, Robert E.; and Hammond, Robert A., to Diebold, Incorporated. Multiple camera superimposed message closed circuit television system. 3,580,993, Cl. 178-6.

Sandoz A.G.: *See—*
Guenthard, Jacques, 3,580,933.

Sandoz Ltd.: *See—*
Guenthard, Jacques, 3,580,933.

Sandri, Alfred: *See—*
Rasworschegg, Heinrich; Markow, Demeter; and Sandri, Alfred,3,580,718.

Sano, Kounosuke: *See—*
Shiio, Isamu; Nakamori, Shigeru; and Sano, Kounosuke,3,580,810.

Sansei Manufacturing Co., Ltd.: *See—*
Suzuki, Kinichiro, 3,579,913.

Sarka, Albert J.; and Blake, Trevor H., said Sarka assor. to Harris-Intertype Corporation, and said Blake assor. to American Can Company. Art of plate making. 3,580,676, Cl. 355-86.

Sarto, Jorma O., to Chrysler Corporation. Engine exhaust recirculation. 3,580,232, Cl. 123-119.

Sarver, James F.; and Hewes, Ralph A., to General Electric Company. Infrared-excitable alkaline earth thorium fluoride luminescent materials. 3,580,860, Cl. 252-301.1

Sarzinski, Stefan, 'Zrak'-Preduzece Precizne mehanike i Optike. Tool carrier assembly for a lathe or other machine tool. 3,580,117, Cl. 82-36.

Sato, Shui; Sakazume, Kaiichiro; and Iytaka, Tateshi, to Konishiroku Photo Industry Co., Ltd. Light-sensitive supersensitized silver halide color photographic emulsions. 3,580,724, Cl. 96-124.

Sato, Shui; Sakazume, Kaiichiro; and Sakamoto, Eiichi, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic emulsion. 3,580,723, Cl. 96-122.

Satterthwaite, James Glenn; and Wilcox, Waverly Hope. Free orbital surface treating tool. 3,579,915, Cl. 51-120.

Saul, George: *See—*
Inouye, Shingo; and Saul, George,3,580,744.

Saunier Duval: *See—*
Cynober, Simon, 3,580,527.

Saurer, Hermann: *See—*
Trinks, Walter; Netzer, Theodor Karl; Victora, Hans T.; Saurer, Hermann; and von Paulgerg, Heinrich,3,580,048.

Save Fuel Corporation: *See—*
Diehl, Charles G., 3,580,238.

Sawada, Yasuhiro: *See—*
Tsujihata, Keiji; Shimada, Masatoshi; Asai, Hiromi; Sawada, Yasuhiro; and Ayuha, Zensaku,3,581,070.

Scarpa Laboratories, Inc.: *See—*
Scarpa, Thomas J., 3,580,092.

Scarpa, Thomas J., to Scarpa Laboratories, Inc. Acoustic flowmeter. 3,580,092, Cl. 73-194.

Schacht Associates, Inc.: *See—*
Schacht, Louis L.; and Turner, Ralph, 3,579,909.

Schacht, Louis L.; and Turner, Ralph, to Schacht Associates, Inc. Balanced door. 3,579,909, Cl. 49-252.

Schaefer, Henry A.: *See—*
Spangler, Fredrick E.; and Schaefer, Henry A.,3,581,249.

Schafer, Fritz, K.G.: *See—*
Schafer, Manfred, 3,580,398.

Schafer, Manfred, to Schafer, Fritz, K.G. Shelving system. 3,580,398, Cl. 211-148.

Schaller, Robert L., to Sundstrand-Engelberg Inc. Platen type belt grinder. 3,579,918, Cl. 51-148.

Scharz, Armin; and Scharz, Oskar, to Polytronic S. A. Electric target apparatus for indicating hit points. 3,580,579, Cl. 273-102.2

Scharz, Oskar: *See—*
Scharz, Armin; and Scharz, Oskar,3,580,579.

Schaumann, Wolfgang: *See—*
Thiel, Max; Kampe, Wolfgang; Stach, Kurt; Schaumann, Wolfgang; and Ribbentrop, Annemarie,3,580,910.
Thiel, Max; Stach, Kurt; Schaumann, Wolfgang; and Ribbentrop, Annemarie,3,580,907.

Scheer, Leila C.Child's sleeping bag. 3,579,675, Cl. 5-343.

Scheibel, Josef, to Braun Aktiengesellschaft. Driving mechanism for slide changers or the like. 3,580,096, Cl. 74-411.5

Scheithauer, Walter: *See—*
Menell, Hans; and Scheithauer, Walter,3,580,318.

Scheler, Holger: *See—*
Werkmeister, Johannes; and Scheler, Holger,3,580,418.

Schenk, Erwin, to Siemens Aktiengesellschaft. Distortion measurement circuit. 3,581,009, Cl. 178-69.

Scher, Joseph William, to Weber & Scher Mfg. Co., Inc. Cable-measuring machine. 3,579,842, Cl. 33-133.

Schering AB: *See—*
Todt, Hans-Gunther; and Dahms, Wolfgang, 3,580,821.

Schiefer Manufacturing Company: *See—*
Schiefer, Paul J.; and McFarland, James D., Jr., 3,580,372.

Schiefer, Paul J.; and McFarland, James D., Jr., to Schiefer Manufacturing Company. Clutch with adjustable centrifugal pressure assist levers. 3,580,372, Cl. 192-105.

Schiffelbein, Richard A. Extension device for toggle switches. 3,581,037, Cl. 200-172.

Schilliger, Michel. Side band generator having step controlled modulation. 3,581,241, Cl. 332-47.

Schilling, Harald: *See—*
Pfander, Hans; Schilling, Harald; and Schwabe, Gerhard,3,581,164.

Schirm, Helmut T.; and Zeigler, Robert O., to Owens-Illinois, Inc. Apparatus for feeding glass. 3,580,713, Cl. 65-327.

Schjeldahl, G. T., Company: *See—*
Adams, Richard C.; Coombes, William S.; and Lerardo, Domenic, 3,580,120.

Schladermundt, Peter: *See—*
Wark, John D.; and Schladermundt, Peter,3,580,580.

Schloss, Charles M., Jr. Method of and apparatus for increasing the capacity of bucket elevators. 3,580,641, Cl. 302-12.

Schlumbaum, Hermann, to Stephan-Werke GmbH & Co. Apparatus for detecting leaks in hollow bodies. 3,580,054, Cl. 73-49.2

Schmale, Carl, Firma: *See—*
Freermann, Hans, 3,579,876.

Schmermund, Alfred. Arrangements for creating delayed electric control effects in response to the reception of electric impulses. 3,579,703, Cl. 317-124.

Schmid, Karl: *See—*
Anliker, Rudolf; Duennenberger, Max; Schmid, Karl; and Siegrist, Adolf Emil,3,580,924.

Schmidt, Carl Oscar, Jr., to Cincinnati Butchers' Supply Company, The. Stuffer with a resilient cushioning means for piston. 3,579,715, Cl. 17-39.

Schmidt, Karl, to GEHAP Gesellschaft fuer Handel und Patentverwertung mbH & Co., K.G., Firma. Electronically-controlled drive mechanism particularly for clocks. 3,579,974, Cl. 58-23.

Schmidt, Wolfgang; Kraft, Karl-Josef; and Kurth, Willi, to Farbenfabriken Bayer Aktiengesellschaft. Apparatus for continuous production of foam plastic sections. 3,579,722, Cl. 18-4.

Schmit, Wilfred W., to Flo-Tronics, Inc. Electric fence charger having ground detector. 3,581,299, Cl. 340-254.

Schmitt, Hermann: *See—*
Heimberger, Werner; and Schmitt, Hermann,3,580,912.

Schmitt, Regis V., to Lord Corporation. Trunnion mounting. 3,580,532, Cl. 248-9.

Schmitz, Werner: *See—*
Fratzscher, Helmut; Klein, Kurt; Maluzi, Joachim; Hansen, Peter; and Schmitz, Werner,3,580,844.

Schneider, Irwin. Information storage with optic materials. 3,580,688, Cl. 356-256.

Schneider, Jack Marvin, to Calmec Extruform Limited. Apparatus for moulding articles from plastics material. 3,580,773, Cl. 156-244.

Schneider, Karl: *See—*
Siegel, Charles R.; and Schneider, Karl,3,580,405.

Schneider, Michael S. Portion access pie plate. 3,580,484, Cl. 229-51.

Schneider, Richard C. Hydrotherapeutic device. 3,580,247, Cl. 128-66.

Schnell, Carl, 1/2 to Griffith Laboratories, Inc., The. Comminuting machine. 3,580,315, Cl. 146-79.

Schnittger, Jan R.; Nilson, Carl-Goran; and Larsson, Bengt D. R., to Alfa-Laval AB. Centrifugal separator with adjustable outlet means. 3,580,492, Cl. 233-7.

Schnur, Nicholas Joseph. Method and apparatus for the centrifuga distillation of a liquid. 3,580,817, Cl. 203-11.

Schoeneman, Robert E., to Potter Instrument Company, Inc. Tension arm. 3,580,453, Cl. 226-195.

Scholle, Peter T.; and Webb, Samuel L., to Addressograph-Multigraph Corporation. Liquid level sensing device. 3,580,158, Cl. 95-89.

Scholz, Norbert, to Agfa-Gevaert Aktiengesellschaft. Variable focal length objective having four lens groups. 3,580,662, Cl. 350-184.

Schrecengost, Eugene E. Combination deer-carcass sled and chaise lounge. 3,580,592, Cl. 280-8.

Schreffler, Robert Z., to Electric Conductor Bearings, Incorporated. Electric conductor bearings. 3,581,267, Cl. 339-8.

Schrewe, Hans, to Mannesmann Aktiengesellschaft. Continuous casting machine for slabs. 3,580,325, Cl. 164-82.

Schriever, Fred G.; and Cheslin, Sigmund. Hand operated tool for marking wire. 3,580,779, Cl. 156-384.

Schroder, Rolf: *See—*
Ehngelsmann, Dieter; Schroder, Rolf; and Becker, Erwin,3,580,152.

Schroeder, Donald S.: *See—*
Orlowski, Donald W.; and Schroeder, Donald S.,3,580,988.

Schuder, Charles B.; Skov, Victor E.; and Lytle, Richard F., to Fisher Governor Company. Flow control device including a pressure-balanced single-seated valve plug. 3,580,288, Cl. 137-630.13

Schuette, Thomas L.; Straub, Melvin J.; Dumas, Pierre; and Aurich, Peter F., to Possis Machine Corporation. Machine for automatically assembling armature cores and commutators therefor. 3,579,771, Cl. 29-33.

Schulkind, Herbert, to Photovolt Corporation. Computing colorimeter. 3,580,683, Cl. 356-184.

Schumacher, Gustav. Grain-lifter for grain-cutting assemblies. 3,579,967, Cl. 56-313.

Schunck, Kurt; and Baunach, Waldemar, to Klimsch & Co. Device for fast removal of exposed film from the suction board of process cameras and delivery to a subsequent process station. 3,580,674, Cl. 355-28.

Schupp, Karl; and Weismann, Hans, to Bosch, Robert, G.m.b.H. Fluid-pressure actuated switch. 3,581,034, Cl. 200-83.

Schure, Alexander: *See—*
Littwin, Sheldon; and Schure, Alexander,3,579,864.

Schwabe, Gerhard: *See—*
Pfander, Hans; Schilling, Harald; and Schwabe, Gerhard,3,581,164.

Schwartz, Ralph E., to Redeco, Inc., mesne. Method and apparatus for the preservation of biological substances. 3,579,999, Cl. 62-56.

Schwartz, William H., to Lester Engineering Company. Machine and clamp force control system therefor. 3,579,741, Cl. 18-30.

Schwartzbeck, Richard A.: *See—*
Mussell, Dorsey R.; and Schwartzbeck, Richard A.,3,580,716.

Schwarz, Ernest I., to EIS Automotive Corporation, The. Two-way check valve. 3,580,273, Cl. 137-493.2

Schwarz, Heinz: *See—*
Cast, Adolf; and Schwarz, Heinz,3,580,455.

Schwenk, Kurt; Gallasch, Ernst; Hablitzel, Hermann; and Jacob, Friedrich, to Messrs. Volkswagenwerk A. G. Foam mould. 3,579,727, Cl. 18-5.

Schwing, Friedrich. Concrete pump assembly. 3,580,696, Cl. 417-515.

Scio Cabinet Company, Inc.: *See—*
Loy, George W., 3,580,787.

SCM Corporation: *See—*
Ott, Robert E., 3,580,733.

Scott, Peter H.: *See—*
Churchill, John W.; Kober, Ehrenfreid H.; Scott, Peter H.; and Smith, Curtis P.,3,580,951.

Scripto, Inc.: *See—*
Vaughan, Harry L., 3,580,699.

Seaboard Fabricators, Inc.: *See—*
Van Dalen, Leonard, 3,580,097.

Sears, Levi L.; and Sommer, Richard N., to SSP Industries. Agricultural implement. 3,579,972, Cl. 56-370.

Security Chemicals, Inc.: *See—*
Fike, Elmer A., 3,580,885.

Sedgwick, Robert K., to Kearney & Trecker Corporation. Apparatus for machining metals electrochemically. 3,580,834, Cl. 204-224.

Sedley, Bruce S., to Bohme, H. O., Inc. Magnet actuated mechanism for use with card having magnetic areas. 3,581,030, Cl. 200-46.

Seed, Aniese E., to Reliance Electric and Engineering Company, The. Constant meshing force rack and pinion. 3,580,095, Cl. 74-409.

Seegmiller, Ben L., to University of Utah, The. Probe device usable in measuring stress. 3,580,057, Cl. 73-67.6

Seegmiller, Ben L. Discretely variable time delay system having submultiple, additive, and alternative delay selection. 3,581,214, Cl. 328-55.

Seekay Chemical Company: *See—*
Rainer, Norman B., 3,580,891.

Seelbach, Walter C.; and Lampathakis, Kyriakos E., to Motorola, Inc. Voltage distribution system for integrated circuits utilizing low resistivity semiconductive paths for the transmission of voltages. 3,581,165, Cl. 317-235.

Seelenbinder, Terrance G., to Addressograph-Multigraph Corporation. Exposure apparatus for copy making machines equipped with light reflective conveyor. 3,580,677, Cl. 355-110.

Sehnert, Robert J.: *See—*
Higgason, Frank G., Jr.; and Sehnert, Robert J.,3,580,494.

Seibu Denki Kogyo Kabushiki Kaisha: *See—*
Watari, Daisaku; and Morita, Tosio, 3,581,044.

Seifried, Walter: *See—*
Kegelmann, Gunter; Gebler, Horst; and Seifried, Walter,3,580,798.
Kurzke, Herbert; Goltner, Wolfgang; and Seifried, Walter,3,580,963.

Seitetsu Kagaku Co., Ltd.: *See—*
Ito, Teruhiko; Mitsui, Naoshi; Maeda, Seiichiro; and Kato, Takeshi, 3,580,866.

Selden, Ronald B., to TRW Inc. Randomly accessed non-interfering input-output data accumulator. 3,581,284, Cl. 340-172.5

Sellers, Francis B.: *See—*
Brinkerhoff, Joris M.; Hunerwadel, Jean L.; and Sellers, Francis B.,3,581,087.

SEMPERIT Osterreichisch-Amerikanische Gummiwerke Aktiengesellschaft: *See—*
Gorter, Werner; and Hauser, Johann, 3,580,319.

Senften, David A.: *See—*
Hunter, Lee; Senften, David A.; and Logan, Edwin W.,3,579,845.

Sennewald, Kurt: *See—*
Baader, Herbert; and Sennewald, Kurt,3,580,958.

Service National dit: Gaz de France: *See—*
Rouet, James; and Vignes, Roger, 3,580,224.

Settanni, Richard, to Leesona Corporation. Coil winder automatically sequencing multiple preset winding selections. 3,580,521, Cl. 242-4.

Setto, Joseph B., to United States of America, Air Force. Dual side-arm controller. 3,580,636, Cl. 297-417.

Seward, George A. Device for controlling exposure from a radioactive source. 3,581,096, Cl. 250-106.

Seymour, Paul Maurice. Folding table and seat support structure. 3,580,632, Cl. 297-157.

Shaad, Robert B. Easy opening flat object mailer. 3,580,490, Cl. 229-92.9

Shadwick, Jan, to Holophane Company, Inc. Street lighting luminaire refractor. 3,581,082, Cl. 240-106.

Shafer, Homer J. Lubricant seal for rotary valve. 3,580,268, Cl. 137-246.22

Shaffstall, Everett L.: *See—*
Perkins, Carroll R.; Shaffstall, Everett L.; Gundersen, James L.; and Yoder, Robert N.,3,581,226.

Shalit, Harold, to Atlantic Richfield Company. Hydrogen production. 3,580,823, Cl. 204-60.

Sharpe, John Thomas Lawrence, to International Standard Electric Corporation. Delay line arrangement. 3,581,121, Cl. 307-293.

Shashoua, Fred E.: *See—*
Hudson, Kenneth C.; and Shashoua, Fred E.,3,580,151.

Shaw, Harold F.: *See—*
Blais, Zoel W.; and Shaw, Harold F.,3,579,674.

Shear, Wayne G.; Everett, Samuel R.; and Olmstead, Merlin E., to Bendix Corporation, The. Clock synchronization without addressing for collision avoidance systems. 3,581,309, Cl. 343-6.8

Shell Oil Company: *See—*
Broussard, Leo P.; Dickson, Leon L., Jr.; and Gardenier, Wilhelmus J. G., 3,580,334.
Hoory, Sadok E.; Newman, Stanley F.; and Vincent, Robert E., 3,580,819.
Simpson, Samuel W., 3,580,047.

Shenfil, Leonid Zalmanovich; Gul, Valentin Evgenievich; Melnikova, Galina Konstantinovna; Siprikova, Nina Isidorovna; Rozhdestvenskayam, Maiya Konstantinovna; and Kuzina, Alexandra Nikitichna. Method of producing electric contact between two cemented parts. 3,580,776, Cl. 156-275.

Shephard, Basil R.: *See—*
Clachan, Margaret L.; McGrail, Patrick T.; and Shephard, Basil R.,3,580,734.

Sheridon, Nicholas K., to Xerox Corporation. Blazed surface hologram. 3,580,657, Cl. 350-3.5

Sheriff, Robert C.: *See—*
Doane, James E.; and Sheriff, Robert C.,3,580,786.

Sherman, Michael: *See—*
Flores, Richard A.; and Sherman, Michael,3,581,124.

Sherman, Russell G.; and Koenig, Robert P., to Powers Regulator Company. Automatic air flow regulator. 3,580,272, Cl. 137-486.

Shevakin, Jury Fedorovich: *See—*
Zayats, Iosif Lvovich; Barabashkin, Vladimir Pavlovich; Matveev, Boris Nikolaevich; and Shevakin, Jury Fedorovich,3,580,036.

Shigetomi, Sadao; and Saito, Shoichi, to Olympus Optical Company Limited. Minature tape recorder. 3,581,022, Cl. 179-100.22

Shiio, Isamu; Nakamori, Shigeru; and Sano, Kounosuke, to Ajinomoto Co., Inc. Fermentative production of L-threonine. 3,580,810, Cl. 195-29.

Shimada, Masatoshi: *See—*
Tsujihata, Keiji; Shimada, Masatoshi; Asai, Hiromi; Sawada, Yasuhiro; and Ayuha, Zensaku,3,581,070.

Shimemura, Etsujiro; and Iwamiya, Masao, to Tsurumi-Seikikosaku-Sho Co., Ltd., The. Transmission transducer for remote measurement. 3,581,238, Cl. 331-135.

Shimodoi, Yutaka; Ootake, Heiichiro; Mihara, Kouichi; Takao, Kiyoshi; and Matsuda, Shogo, to Asahi Kasei Kogyo Kabushiki Kaisha. Polyolefin-molded article having good antistatic property and preparation of the same. 3,580,735, Cl. 117-138.8

Shimura, Kazuo: *See—*
Kishi, Kanesuke; Tsuchiya, Noboru; and Shimura, Kazuo,3,581,012.

Shirek, Jerry. Variable stack electrical condenser. 3,581,158, Cl. 317-230.

Shockey, Ray Douglas: *See—*
Hollis, Jack Lyndon; and Shockey, Ray Douglas,3,580,781.

Shoemaker, William E.; and Wilson, David W., to Signetics Corporation. Testing apparatus for electrical device where a stimulus is varied between two states. 3,581,198, Cl. 324-73.

Short, Franklin W., to Parke, Davis & Company. Carbazole-4-alkanoic acids and tetrahydrocarbazole- 4-alkanoic acids. 3,580,926, Cl. 260-315.

Shreve, Robert N., to Conwed Corporation. Method of constructing a mattress. 3,579,774, Cl. 29-91.1

Shreve, Russell L., to Teleflex Incorporated, mesne. Remote flexible cable. 3,580,103, Cl. 74-501.

Shroyer, Larry L., to Lyall Electric, Inc. Thermoplastic lamp holder. 3,581,270, Cl. 339-160.

Shull, John D., Jr., to National Gypsum Company. Plaster colorant system. 3,580,390, Cl. 206-46.

Shuster, Joseph; and Brown, Richard L., to Icore Industries. Package turning device. 3,580,379, Cl. 198-31.

Shyne, James J.: *See—*
Milewski, John V.; and Shyne, James J.,3,580,731.

Sicona, Martin: *See—*
Stevens, Roger L.; Putnam, Peter A.; and Sicona, Martin,3,581,017.

Siebert, Alan R., to Goodrich, B. F., Company, The. Preparation of xanthate terminated polymers. 3,580,830, Cl. 204-159.24

Siebold, Howard E., to Liquid Controls Corporation. Temperature compensator. 3,580,073, Cl. 73-233.

Siegel, Charles R.; and Schneider, Karl, to Harnischfeger Corporation. Multiple V-belt drive for a crowd mechanism of a power shovel. 3,580,405, Cl. 214-135.

Siegmund, Walter P., to American Optical Corporation. Method of making fiberscopes with trimmed tips. 3,580,775, Cl. 156-247.

Siegrist, Adolf Emil: *See—*
Anliker, Rudolf; Duennenberger, Max; Schmid, Karl; and Siegrist, Adolf Emil,3,580,924.

Siemens Aktiengesellschaft: *See—*
Ciriack, Gunter; Eckert, Georg; and Hofmann, Horst, 3,580,739.
Hini, Paul, 3,579,820.
Kafka, Wilhelm, 3,581,113.
Kumpf, Hermann, 3,580,807.
Schenk, Erwin, 3,581,009.
Weber, Rolf, 3,581,115.

Sieracin Corporation, The: *See—*
Miller, Harold A.; Nider, William K.; and Zavialoff, Igor P., 3,579,718.

Siewert, John J.: *See—*
Westra, Dan P.; and Siewert, John J.,3,580,123.

Signetics Corporation: *See—*
Nielsen, Einer Dale, 3,581,107.
Shoemaker, William E.; and Wilson, David W., 3,581,198.

Silva, Melvin: *See—*
Morey, Dennison H., Jr.; Silva, Melvin; and Browning, Gordon D.,3,581,197.

Simcom Corporation: *See—*
Levasseur, Joseph L., 3,581,063.

Simms Group Research and Development Limited: *See—*
Bradbury, Cyril Henry, 3,580,231.

Simon, Alan J.; Johnson, Joseph E.; and O'Keeffe, Trence W., to Westinghouse Electric Corporation. Method and apparatus for selective etching of insulating layers. 3,580,749, Cl. 148-187.

Simonetti, Louis F.: *See—*
Boettcher, Stephen A.; and Simonetti, Louis F.,3,579,916.
Boettcher, Stephen A.; and Simonetti, Louis F.,3,579,917.

Simpson, Samuel W., to Shell Oil Company. Pour and cloud point analyzer. 3,580,047, Cl. 73-17.

Sims, Anson: *See—*
Stastny, Edwin O.; Stormon, Lester T.; and Sims, Anson,3,580,585.

Simshauser, Herbert H. Can crushing apparatus. 3,580,167, Cl. 100-52.

Sinclair, Rolf M.: *See—*
Johnson, John L.; Winsor, Niels K.; Dawson, John M.; Sinclair, Rolf M.; and Hosea, Joel C.,3,580,802.

Sinet, Maurice. On-load voltage regulators. 3,581,189, Cl. 323-43.5

Singer Company, The: *See—*
Klawunn, Herbert G.; and Herr, John Addison, 3,580,780.
Wiehl, Frederick R.; and Wilson, Edmund B., III, 3,580,106.

Singer-Cobble Limited: *See—*
Evans, Raymond Victor, 3,580,454.

Singer-General Precision, Inc.: *See—*
Ebeling, William C., 3,580,978.
Paradise, Ronald Y.; Masel, Marvin; Naydan, Bob N.; and Brinkman, John D., 3,581,304.

Sinkula, Anthony A.: *See—*
Morozowich, Walter; and Sinkula, Anthony A.,3,580,904.

Siprikova, Nina Isidorovna: *See—*
Shenfil, Leonid Zalmanovich; Gul, Valentin Evgenievich; Melnikova, Galina Konstantinovna; Siprikova, Nina Isidorovna; Rozhdestvenskayam, Maiya Konstantinovna; and Kuzina, Alexandra Nikitichna,3,580,776.

Siu, Paul Y., to Burroughs Corporation. Crystal stabilized high frequency transistor multivibrator. 3,581,235, Cl. 331-113.

Skov, Victor E.: *See—*
Schuder, Charles B.; Skov, Victor E.; and Lytle, Richard F.,3,580,288.

Slan, Jack, to Dominion Luggage Co., Limited. Method of making luggage cases. 3,579,804, Cl. 29-434.

Slane, Joseph J.: *See—*
Zink, Stanley C.; and Slane, Joseph J.,3,580,648.

Sloan, Frank Philip, to Aquair Corporation Limited. Venting device for toilets. 3,579,650, Cl. 4-72.

Smidth, F. L., & Co.: *See—*
Hansen, Dan Sigurd, 3,580,552.

Smith, A. O., Corporation: *See—*
Marks, Lawrence P., 3,580,187.

Smith, Cecil R. Door hinge with spaced automatic latching positions for selective degrees of door opening. 3,579,712, Cl. 16-141.

Smith, Curtis P.: *See—*
Churchill, John W.; Kober, Ehrenfreid H.; Scott, Peter H.; and Smith, Curtis P.,3,580,951.

Smith, Dallas F.: *See—*
Arnold, Richard B.; and Smith, Dallas F.,3,579,818.

Smith, David C., to United Aircraft Corporation. Passive Q-switch and modulator for co lasers. 3,581,230, Cl. 331-94.5

Smith, Donald R.; and Cavestany, Adrian V., to Carrier Corporation. Gas burner. 3,580,512, Cl. 239-432.

Smith, Fred T., to Barber-Greene Company. Method of reclaiming bulk material. 3,580,407, Cl. 214-152.

Smith, Gerald D.: *See—*
Zimmerman, Arie; Luksch, James A.; and Smith, Gerald D.,3,581,209.

Smith, Gilbert L. Meat cleaning brush. 3,579,697, Cl. 15-3.1

Smith, John J.: *See—*
Leopold, Wilbur R., Jr.; and Smith, John J.,3,580,270.
Magi, Hugo; and Smith, John,3,581,079.

Smith Kline & French Laboratories: *See—*
Cook, Allen D.; and Szabo, Kalman T., 3,580,220.

Smith, Leonard R. D.: *See—*
Cannon, Richard L.; and Smith, Leonard R. D.,3,581,254.
Cannon, Richard L.; and Smith, Leonard R. D.,3,581,255.

Smith, Michael Charles George: *See—*
Cheeseman, Ian Clifford; and Smith, Michael Charles George,3,580,693.

Smith, Peter W., to Bell Telephone Laboratories, Incorporated. Simultaneous trasverse and longitudinal mode locking in a laser employing an active absorption cell. 3,581,228, Cl. 331-94.5

Smith, Raymond W.: *See—*
Korbilas, Christ P.; and Smith, Raymond W.,3,580,276.

Smith, Thomas B.; and Swassing, Raymond H., Jr. Educational device for training in mathematics. 3,579,874, Cl. 35-32.

Smith, William Irving, to RCA Corporation. Automatic impedance matching circuits for variable frequency source. 3,581,244, Cl. 333-17.

Snell, John, to Lucas, Joseph, (Industries) Limited. Method of manufacturing a cam for use in an ignition distributor. 3,579,933, Cl. 51-315.

Snow, Lawrence E., to White Consolidated Industries, Inc. Ice maker. 3,580,009, Cl. 62-353.

Snyder, David W., to Snyder Specialty, Inc. Wire grooving method and machine. 3,580,042, Cl. 72-339.

Snyder Specialty, Inc.: *See—*
Snyder, David W., 3,580,042.

Sobchak, Frank L.: *See—*
Brouwer, Frans; and Sobchak, Frank L.,3,580,110.
Brouwer, Frans; and Sobchak, Frank L.,3,581,001.

Soboleski, Henry J. Fruit and vegetable jar suppressor device. 3,580,409, Cl. 215-81.

Sobrafina S.A.: *See—*
Hellborg, Lars Ingvar, 3,579,785.

Soc. per Azioni Fratelli Borletti: *See—*
Moro, Antonio, 3,581,263.

Societa Italiana Telecommunicazioni Siemens S.p.A.: *See—*
Martinelli, Saverio; and De Varda, Giorgio, 3,581,016.

Societa Italiana Telecomunicazioni Siemens S.p.A.: *See—*
Andreis, Pio, 3,581,260.
Dal Monte, Giorgio; and Pitidis, Nicola, 3,581,008.

Societe a Responsabilite Limitee Laboraver: *See—*
Guiriec, Raymond, 3,580,251.

Societe Anonyme Poclain: *See—*
Bellart, Jean-Pierre B., 3,580,406.

Societe de L'Aerotrain:*See—*
Giraud, Francois Louis, 3,580,184.

Societe d'Etudes de Recherches et d'Application Scientifiques et Medicales E.R.A.S.M.E.:*See—*
Pedrazzoli, Andrea; and Dall'Asta, Leone, 3,580,914.

Societe d'Exploitation des Ressorts Auto- Amortisseus Jarret:*See—*
Jarret, Jacques; and Jarret, Jean, 3,580,560.

Societe Industriell Bull-General Electric (Societe Anonyme): *See—*
Vasse, Jacques, 3,580,566.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation:*See—*
Caruel, Jacques Emile Jules; Quillevere, Herve Alain; and Bauger, Louis, 3,579,983.

Societe Technique de Geothermie: *See—*
Maugis, Pierre Marcel, 3,580,330.

Soda, Kiyoshi: *See—*
Wada, Misao; and Soda, Kiyoshi,3,580,530.

Solatron Enterprises,: *See—*
Bean, Dennis P.; and Parks, John C., 3,580,030.

Solomon, Kenneth H.: *See—*
Marandi, Ali; and Solomon, Kenneth H.,3,580,508.

Somet S.p.A. Societa Meccanica Tessile: *See—*
Piccoli, Mario, 3,580,291.
Sommer, Francis Noel, to Sommer S. A. Method of non-woven cloth manufacture. 3,579,763, Cl. 28-72.2
Sommer, Richard N.: *See—*
Sears, Levi L.; and Sommer, Richard N.,3,579,972.
Sommer S. A.: *See—*
Sommer, Francis Noel, 3,579,763.
Sony Corporation: *See—*
Eguchi, Yasuhito; Fujiwara, Yoshio; and Tohma, Takaaki, 3,580,992.
Kishi, Kanesuke; Tsuchiya, Noboru; and Shimura, Kazuo, 3,581,012.
Numakura, Toshihiko, 3,580,990.
Sorenson Engineering, Inc.: *See—*
Sorenson, Jess Frank, 3,579,686.
Sorenson, Jess Frank, to Sorenson Engineering, Inc. Automatic screw machine. 3,579,686, Cl. 10-87.
Soriano, Charles A., to Atwater-Forbes Corporation. Foot measuring apparatus. 3,579,837, Cl. 33-3.
Sorokin, Vladimir Andreevich: *See—*
Bushuev, Vladimir Pavlovich; Gubin, Georgy Viktorovich; Zolotarev, Petr Semenovich; Sorokin, Vladimir Andreevich; Palamarchuk, Vladimir Ivanovich; and Dmitrenko, Viktor Makarovich,3,580,554.
Soures, Nicholas M.: *See—*
Hansen, Richard C.; Mahler, Charles J.; Soures, Nicholas M.; and Stickney, Thomas L.,3,581,000.
Southern Gas Association: *See—*
Damewood, Glenn; Sparks, Cecil R.; and King, James D., 3,581,077.
Spadoni, Frank G., Jr.; and Kleban, Michael P., to Litton Precision Products, Inc. Device for twisting and aligning terminal posts of an electrical connector. 3,580,297, Cl. 140-149.
Spaid, William L. Digital capacitance meter by measuring capacitor discharge time. 3,581,196, Cl. 324-60.
Spangler, Fredrick E.; and Schaefer, Henry A., to General Electric Company. Miniature helical resonators. 3,581,249, Cl. 333-705.
Sparks, Cecil R.: *See—*
Damewood, Glenn; Sparks, Cecil R.; and King, James D.,3,581,077.
Sparks, Derick A., to Power Industries Limited. Gripping means for binding materials. 3,580,450, Cl. 226-171.
Sparlin, Derry D., to Continental Oil Company. Method for injecting fluids into underground formations having differing permeabilities. 3,580,338, Cl. 166-276.
Spartanics Limited: *See—*
Willits, Samuel P.; and Mohan, William L., 3,581,067.
Speedfam Corporation: *See—*
Boettcher, Stephen A.; and Simonetti, Louis F., 3,579,916.
Boettcher, Stephen A.; and Simonetti, Louis F., 3,579,917.
Speeth, Sheridan D., to Autotelic Industries Limited, mesne. Game device including selectively impact operable lights. 3,580,575, Cl. 273-58.
Speizman Industries, Inc.: *See—*
Starbuck, Leslie; and Whymark, Arthur F., 3,580,392.
Spenadel, Lawrence, to Esso Research and Engineering Company. Process for preparing a closed cell EPDM sponge composition. 3,580,867, Cl. 260-2.5
Spence, Thomas C., to Dow Chemical Company, The. Method for manufacturing nonwoven fibrous products from gel fibers. 3,580,801, Cl. 162-157.
Spencer, Lloyd; and Petterson, Tor. Actuator for mixing valve. 3,580,091, Cl. 74-107.
Spencer, Virgil, to Armstrong Cork Company. Method of separating a sheet into chips. 3,580,516, Cl. 241-25.
Sperry Rand Corporation: *See—*
Bartik, William J., 3,581,294.
Fedde, George A.; and Eckert, John Presper, Jr., 3,581,293.
Gettel, Roger W., 3,580,277.
Granberg, Mauritz L.; and Mueller, Hubert W., Jr., 3,581,076.
Hood, John L.; and McGee, Joe H., 3,581,173.
Spider Staging, Inc.: *See—*
Fisher, Sidney L., 3,580,010.
Spieth, Rudolf; and Otto, Gunter. Hydropneumatic piston-cylinder arrangement. 3,580,559, Cl. 267-126.
Spitler, Nathan Shreve. Hydraulic steering and braking system for snow skis. 3,580,605, Cl. 280-11.13
Spitz, David A., to Industrial Nucleonics Corporation. Spectrum analyzer including sampling and scaling means. 3,581,199, Cl. 324-77.
Spitzer, Artur, to Spitzer, Ludwig Sen. KG (Kommanditgesellschaft). Convertible transport container with plural funnel type outlets. 3,580,434, Cl. 222-461.
Spitzer, Artur, to Spitzer, Ludwig, Sen. KG (Kommanditgesellschaft). Transport container for flowable material. 3,580,643, Cl. 302-53.
Spitzer, Ludwig Sen. KG (Kommanditgesellschaft): *See—*
Spitzer, Artur, 3,580,434.
Spitzer, Artur, 3,580,643.
Spitzl, Walter: *See—*
Meisner, Alfred; and Spitzl, Walter,3,581,128.
Sprague Electric Company: *See—*
Dornfeld, John E., 3,581,143.
Sprunger, Lynn H. Anti-sway suspension system for an axled vehicle. 3,580,593, Cl. 280-124.
Square D Company: *See—*
Wrabetz, Voyta E.; and Banister, Ronald A., 3,580,102.
SSP Industries: *See—*
Sears, Levi L.; and Sommer, Richard N., 3,579,972.
Staat, Karl-Hans: *See—*
Bindernagel, Ali; Kost, Erwin; and Staat, Karl-Hans,3,580,020.
Stach, Kurt: *See—*
Thiel, Max; Kampe, Wolfgang; Stach, Kurt; Schaumann, Wolfgang; and Ribbentrop, Annemarie,3,580,910.
Thiel, Max; Stach, Kurt; Schaumann, Wolfgang; and Ribbentrop, Annemarie,3,580,907.
Stackpole Carbon Company: *See—*
Bang, Mogens W., 3,579,743.
Stahl, Laddie L., to General Electric Company. Multipurpose air supply system. 3,580,401, Cl. 214-1.
Stahlmann, Rudolf: *See—*
Gawlick, Heinz; Stahlmann, Rudolf; and Umbach, Hans,3,580,179.
Stamm, Alex F.: *See—*
Gage, Arthur F.; and Stamm, Alex F.,3,580,459.
Stams, Dietrich, to Bosch, Robert, G.m.b.H. Hydraulic drive control arrangement. 3,579,978, Cl. 60-19.
Standard Brands Chemical Industries, Inc.: *See—*
Lenke, Gerd M., 3,580,894.
Stone, Raymond A.; Lister, Fred; and Heller, David S., 3,580,876.
Standard Oil Company (Indiana): *See—*
Ginsburgh, Irwin; and Nebelsiek, Hilbert J., 3,580,414.
Standrad International Corporation: *See—*
Chaban, Michael J., Jr., 3,580,449.
Stantni Vyzkumny Ustav Textilni: *See—*
Jisa, Miloslav; Zmatlik, Josef; Mohelnicky, Josef; and Milichovsky, Bohumil, 3,580,295.
Staples, Nicholas B.: *See—*
Garrett, Elgie E.; De Franco, Thomas P.; and Staples, Nicholas B.,3,581,135.
Starbuck, Leslie; and Whymark, Arthur F., to Speizman Industries, Inc. Method and apparatus for removing a flaccid article from a support surface. 3,580,392, Cl. 209-74.
Stark, Donald A.; Di Bartolo, Ernest A.; Feather, Harry A.; and Sundin, Charles H., to Fluid Controls, Inc. Linear self-synchronizing master-slave hydraulic remote control device. 3,579,989, Cl. 60-54.5
Stastny, Edwin O.; Stormon, Lester T.; and Sims, Anson, to Mattel, Inc. Device for reproducing sounds in toys. 3,580,585, Cl. 274-1.
Statham Instruments Inc.: *See—*
Hickman, Norman A., 3,580,071.
Stauffer Chemical Company: *See—*
O'Brien, Edward D., 3,580,545.
Price, Glenn R.; and Walsh, Edward N., 3,580,922.
Stauffer-Wacker Silicone Corporation: *See—*
Getson, John Charles, 3,580,971.
Staunton, Kenneth L., to Sylvania Electric Products, Inc. Color dot screen with dot form compensation for apparent shift of beam deflection center. 3,581,136, Cl. 313-92.
Stawski, Theodore H., to Becton, Dickinson and Company. Swab dispenser and package therefor. 3,580,472, Cl. 229-17.
Stearns, Charles F.: *See—*
Urban, Louis A.; and Stearns, Charles F.,3,579,992.
Stearns Electric Corporation: *See—*
McCarthy, Richard H., 3,580,367.
Stebbins, Robert C. Insect inspection cage. 3,580,219, Cl. 119-1.
Stech, Peter: *See—*
Born, Dieter; Stech, Peter; and Huebner, Werner,3,580,587.
Stedman Foundry and Machine Company, Incorporated: *See—*
Myers, Thomas Leroy, 3,580,520.
Stein, Marcel. Top roller for textile drafting devices. 3,579,779, Cl. 29-113.
Steinberg, David R., to Corning Glass Works. Pressure transducer for ionizable fluids. 3,580,075, Cl. 73-339.
Steindler, Julius P.: *See—*
Panko, Walter B.; and Steindler, Julius P.,3,579,912.
Steinmetz, Floyd. Ball bearing lapping machine. 3,579,911, Cl. 51-3.
Steinvoort, Leendert: *See—*
Duerink, Steven; and Steinvoort, Leendert,3,580,463.
Stenklyft, Gerald H.: *See—*
Kirk, Thomas E.; and Stenklyft, Gerald H.,3,581,150.
Stepan Chemical Company: *See—*
Greenleaf, James O., 3,579,940.
Stephan-Werke GmbH & Co.: *See—*
Schlumbaum, Hermann, 3,580,054.
Steppan, Hartmut: *See—*
Maar, Herbert; Steppan, Hartmut; Messwarb, Gunter; and Luders, Walter,3,580,888.
Stevens, Irving J.; and Alexander, Jerry. Bone implant. 3,579,831, Cl. 32-10.
Stevens, Roger L.; Putnam, Peter A.; and Sicona, Martin, to Aerojet-General Corporation. Electronic multiplexer. 3,581,017, Cl. 179-15.
Stevenson, Louis A., Jr. Pulse generator and encoder. 3,581,216, Cl. 328-61.
Stewart, Johnny E. Animal call. 3,579,903, Cl. 46-180.
Stewart, Mary J.; and Price, John A., to FMC Corporation. Polyesters stabilized with aromatic isocyanates. 3,580,886, Cl. 260-45.9

Stewart-Warner Corporation: *See—*
Bash, Sidney D., 3,580,286.
Brouwer, Frans; and Sobchak, Frank L., 3,580,110.
Brouwer, Frans; and Sobchak, Frank L., 3,581,001.
Powell, Patrick L., 3,580,497.
Rieth, Lawrence E., 3,581,081.
Stickle, Stanley A., to Clark Equipment Company. Portable ramp. 3,580,373, Cl. 193-5.
Stickney, Thomas L.: *See—*
Hansen, Richard C.; Mahler, Charles J.; Soures, Nicholas M.; and Stickney, Thomas L.,3,581,000.
Stiegelmeyer, Joh., & Co. G.m.b.H.: *See—*
Kotter, Helmut, 3,579,671.
Stitchcraft Corporation: *See—*
Krein, Reuben J., 3,580,561.
Stock, David K.; and Wech, Robert J., to FMC Corporation. Bag stack accumulating conveyor. 3,580,142, Cl. 93-33.
Stock, David K.: *See—*
Richter, Herbert; Stock, David K.; Wech, Robert J.; Stock, David K.; and Wech, Robert J.,3,580,141.
Richter, Herbert; Stock, David K.; Wech, Robert J.; Stock, David K.; and Wech, Robert J.,3,580,141.
Stokeld, Richard W., Jr.: *See—*
Moorer, Henry D.; Lewis, Ralph M.; and Stokeld, Richard W., Jr.,3,580,962.
Stoltz, Jacque R.: *See—*
Cox, John B.; and Stoltz, Jacque R.,3,580,072.
Stone, Guthrie B. Tightrope device. 3,580,568, Cl. 272-60.
Stone, Morris Denor; and Talbot, Howard Hubbell, to United Engineering and Foundry Company. Apparatus for reducing the width of metallic slabs. 3,580,032, Cl. 72-199.
Stone, Raymond A.; Lister, Fred; and Heller, David S., to Standard Brands Chemical Industries, Inc. Film-forming composition of interpolymer latex and coalescing agent. 3,580,876, Cl. 260-29.4
Stone, Roger B.: *See—*
Bell, Allan J.; and Stone, Roger B.,3,581,220.
Storey, William T., II: *See—*
Eichert, Edwin S.; and Storey, William T., II,3,581,250.
Stormon, Lester T.: *See—*
Stastny, Edwin O.; Stormon, Lester T.; and Sims, Anson,3,580,585.
Stouffer, James R.; Buege, Dennis R.; and Gillis, Wayne A., to Cornell Research Foundation, Inc. Meat tenderizing method. 3,579,716, Cl. 17-45.
Strack, Richard R., to Bendix Corporatin, The. Pressure transducer. 3,580,082, Cl. 73-406.
Strafford, Richard A.; and Davis, William J.Bowler's equalizing weight. 3,580,572, Cl. 273-54.
Straub, Melvin J.: *See—*
Schuette, Thomas L.; Straub, Melvin J.; Dumas, Pierre; and Aurich, Peter F.,3,579,771.
Streed, Donovan P. Humidity and temperature sensing and control circuit. 3,580,501, Cl. 236-44.
Streit, Rudolf: *See—*
Piazza, Gian-Franco; Streit, Rudolf; Ulrich, Martin; Laber, Werner; Burkert, Adolf; Tron, Manfred; and Waluga, Wolfgang,3,581,183.
Strem, Lawrence F. Visual aid for teaching and testing the sight reading of the fractional divisions of an inch. 3,579,860, Cl. 35-31.
Strick Corporation: *See—*
Abolins, Andrew, 3,580,410.
Strittmater, David J.; and Voelker, Nicholas W., to Universal Oil Products Company. Laminate bond peeling strength tester. 3,580,065, Cl. 73-150.
Stroburg, Clark E.; and Stroburg, Eldon L. Combine. 3,580,258, Cl. 130-27.
Stroburg, Eldon L.: *See—*
Stroburg, Clark E.; and Stroburg, Eldon L.,3,580,258.
Strohm, Siegfried, to Porsche, Dr.- Ing. H.c.F., K.G., Firma. Electronically controlled speedometer with maximum speed indicator. 3,581,206, Cl. 324-169.
Strom, Sven B., to American Pulverizer Company. Ring hammers. 3,580,518, Cl. 241-193.
Stromin, Boris Alexandrovich: *See—*
Baranov, Boris Konstantinovich; and Stromin, Boris Alexandrovich,3,581,171.
Strout, Russell B.: *See—*
Lowry, Robert D.; and Strout, Russell B.,3,579,662.
Strub, Rene, to Sulzer Brothers Limited. Gas turbine power plant including a nuclear reactor as heaour. 3,579,982, Cl. 60-36.
Stuart, Henry P. Bandage containing a medicinal material and method of using. 3,580,254, Cl. 128-268.
Stubbs, Dennis: *See—*
Bond, Harry Laurence Fred; Stubbs, Dennis; and Maltby, Todwick,3,580,035.
Stutz, Theo; and Mueller, Werner, to Contraves AG. Display arrangement for symobls. 3,581,301, Cl. 340-324.
Succo, John A.: *See—*
Darragh, Richard T.; and Succo, John A.,3,580,729.
Sugarman Laboratories, Inc.: *See—*
Sugarman, Robert, 3,581,290.
Sugarman, Robert, to Sugarman Laboratories, Inc. Information display system. 3,581,290, Cl. 340-172.5
Sugimura, Kazuo; and Sugimura, Nobuyuki. Accumulator. 3,580,290, Cl. 138-121.
Sugimura, Nobuyuki: *See—*
Sugimura, Kazuo; and Sugimura, Nobuyuki,3,580,290.
Suhr, Volker: *See—*
Panschow, Rudolf; Russbuelt, Herbert; Suhr, Volker; and Ullmann, Werner,3,581,045.
Sulzer Brothers Limited: *See—*
Pfarrwaller, Erwin, 3,580,011.
Strub, Rene, 3,579,982.
Sumitomo Electric Industries, Ltd.: *See—*
Kaneno, Saburo; Yamaguchi, Takeshi; and Yoshioka, Shunichi, 3,581,084.
Sun Oil Company: *See—*
Driscoll, Gary L., 3,580,964.
Sunbeam Corporation: *See—*
Grahn, Robert D., 3,579,827.
Sundberg, Alan F. Portable toilet and sink structures and the like. 3,579,655, Cl. 4-116.
Sundin, Charles H.: *See—*
Stark, Donald A.; Di Bartolo, Ernest A.; Feather, Harry A.; and Sundin, Charles H.,3,579,989.
Sundstrand-Engelberg Inc.: *See—*
Schaller, Robert L., 3,579,918.
Susquehanna Corporation, The: *See—*
Boswell, George T., 3,580,176.
Wallace, Jacob L., Jr., 3,581,006.
Suter, Xaver, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Rocket with spreadable empennage. 3,580,529, Cl. 244-3.29
Suzuki, Hiroshi: *See—*
Nakanome, Iyohiko; Takeya, Kenji; Suzuki, Hiroshi; and Kitagawa, Yasuhiro,3,580,878.
Suzuki, Kinichiro, to Sansei Manufacturing Co., Ltd. Hydro-electrical control for a rotary surface grinder. 3,579,913, Cl. 51-95.
Suzuki, Takashi: *See—*
Kasahara, Shigekazu; Takahashi, Yuji; Suzuki, Takashi; Umeda, Shinichi; Adachi, Kazuo; and Fukuda, Yasuo,3,580,883.
Suzuki, Tamotu: *See—*
Kanzaki, Fumiaki; Kozakura, Yoshio; Akahide, Kozo; and Suzuki, Tamotu,3,581,039.
Suzuki, Tokihide: *See—*
Horie, Hajime; Hirano, Tadao; and Suzuki, Tokihide,3,580,015.
Suzuki, Yoshiaki; and Inamoto, Toshiharu, to Matsushita Electric Industrial Co., Ltd. Data processing system. 3,581,288, Cl. 340-172.5
Suzuoka, Takayuki, to Hitachi, Ltd. Gold-aluminum lead-out structure of a semiconductor device. 3,581,166, Cl. 317-235.
Svensen, Niels Alf, to United Aircraft Corporation. Non-clogging marine grille with unpowered weed cutting provisions. 3,580,210, Cl. 115-0.5
Swanson, Percy L. Gas cooled microscope slide. 3,580,658, Cl. 350-93.
Swartz, Elmer L.: *See—*
Warren, Raymond W.; and Swartz, Elmer L.,3,580,069.
Swassing, Raymond H., Jr.: *See—*
Smith, Thomas B.; and Swassing, Raymond H., Jr.,3,579,874.
Swift, Harold E., to Gulf Research & Development Company. Dehydrogenation of cycloaliphatic ketones and alcohols. 3,580,970, Cl. 260-621.
Sybron Corporation: *See—*
Amorese, Franklyn J., 3,580,547.
Sylvania Electric Products, Inc.: *See—*
Britt, Richard G.; and Loughridge, Frederick A., 3,580,710.
Burdick, Glen A., 3,579,768.
Ingraham, Robert C.; and Ramsey, Hubert J., 3,579,816.
Johnson, Alfred D., 3,581,134.
Staunton, Kenneth L., 3,581,136.
Sylvester, Willard G.: *See—*
Bonton, Ira D.; and Sylvester, Willard G.,3,580,564.
Systems Peripherals Division: *See—*
Meyer, Forrest C., 3,581,215.
Szabo, Kalman T.: *See—*
Cook, Allen D.; and Szabo, Kalman T.,3,580,220.
Taccone, Russell W., to Kelsey-Hayes Company. Plural mold casting apparatus. 3,580,329, Cl. 164-366.
Tadini, Costantino: *See—*
Ullmann, Werner; Tadini, Costantino; and Salim, Ehsan,3,581,043.
Tahan, Victor G.: *See—*
Wilkinson, Jack E.; and Tahan, Victor G.,3,580,256.
Takahashi, Shozo: *See—*
Araki, Shigeru; Takahashi, Shozo; and Muto, Ichiro,3,580,649.
Takahashi, Takao: *See—*
Sakamoto, Kenro; Takahashi, Takao; Koitabashi, Takeo; and Fujiwara, Mitsuto,3,580,722.
Takahashi, Yuji: *See—*
Kasahara, Shigekazu; Takahashi, Yuji; Suzuki, Takashi; Umeda, Shinichi; Adachi, Kazuo; and Fukuda, Yasuo,3,580,883.
Takamatsu, Tetsuya: *See—*
Yoshimoto, Toshio; Narumiya, Tsuneaki; Kaneko, Seiya; Yoshii, Hiroshi; and Takamatsu, Tetsuya,3,580,897.
Takao, Kiyoshi: *See—*
Shimodoi, Yutaka; Ootake, Heiichiro; Mihara, Kouichi; Takao, Kiyoshi; and Matsuda, Shogo,3,580,735.
Takaoka, Kentaro. Aerosol nebulizers. 3,580,249, Cl. 128-194.
Takeya, Kenji: *See—*
Nakanome, Iyohiko; Takeya, Kenji; Suzuki, Hiroshi; and Kitagawa, Yasuhiro,3,580,878.

Talbot, Howard Hubbell: *See—*
Stone, Morris Denor; and Talbot, Howard Hubbell,3,580,032.
Tall, Leonard H.: *See—*
Ishihara, Frank Y., 3,579,801.
Tam, Wayne C. Panel frame assembly. 3,579,943, Cl. 52-656.
Tamai, Katsumi: *See—*
Higashimura, Einosuke; Tamai, Katsumi; and Nakamura, Eiichi,3,580,879.
Tamoni, Gianfranco: *See—*
Bini, Giancarlo; and Tamoni, Gianfranco,3,580,284.
Tanaka, Hiroshi; and Ishihara, Masayoshi, to Canon Camera Kabushiki Kaisha. Corona discharging device for electrophotographic process. 3,581,149, Cl. 317-4.
Tanaka, Yoshimasa: *See—*
Matsumoto, Masamiki; Nishino, Motohisa; and Tanaka, Yoshimasa,3,579,824.
Tanguay, Jean Paul, to Placements Jean Paul Tanguay Ltee, mesne. Mobile tree slasher. 3,580,306, Cl. 143-46.
Tanner, Carole S.; and Tontini, Remo, to Rohr Corporation. Sound suppression system. 3,579,993, Cl. 60-262.
Targonski, Leonard A.: *See—*
Hyde, Thomas J.; and Targonski, Leonard A.,3,580,577.
Taylor, Howard N.: *See—*
Cannon, Lester E.; Tindall, John M.; and Taylor, Howard N.,3,580,476.
Taylor, Ian: *See—*
Howitt, Fred; and Taylor, Ian,3,580,747.
Taylor, James E.: *See—*
Pliskin, William A.; and Taylor, James E.,3,580,066.
Teague, Earl E. Weed seed collector for a thresher combine. 3,580,257, Cl. 130-24.
Technical Metals, Inc.: *See—*
Packard, Robert F., 3,579,800.
Technical Wire Products, Inc.: *See—*
Lamp, Richard W.; Kopf, Joseph E.; Dravis, Donald P.; and Cuneo, Robert A., 3,580,981.
Technicolor, Inc.: *See—*
Ben Bassett, Marvin, 3,580,665.
Technitrol, Inc.: *See—*
Eichert, Edwin S.; and Storey, William T., II, 3,581,250.
Tecumseh Products Company: *See—*
Tenisons, Janis, 3,580,116.
Teed, Richard K.; and Klose, Karl W., to Riegel Textile Corporation. Apparatus for automatically fabricating individual articles. 3,580,198, Cl. 112-121.11
Tegholm, Ruben, to Atlas Copco Aktiebolag. Temperature responsive means for automatically correcting variations in the compensation of an electromagnetic prospecting device. 3,581,194, Cl. 324-6.
Tekkosha Co., Ltd.: *See—*
Kasahara, Shigekazu; Takahashi, Yuji; Suzuki, Takashi; Umeda, Shinichi; Adachi, Kazuo; and Fukuda, Yasuo, 3,580,883.
Teleflex Incorporated: *See—*
Shreve, Russell L., 3,580,103.
Telefonaktiebolaget L M Ericsson: *See—*
Fjallbrant, Tore Torstensson, 3,581,246.
Mattsson, Orjan Mats; and Widl, Walter Herbert Ewin, 3,581,075.
Telefunken Patentverwertungsgesellschaft m.b.H.: *See—*
Dopner, Horst, 3,580,525.
Telemation, Inc.: *See—*
Ward, Ronald C.; and Allen, David T., 3,581,011.
Telesco Brophey Limited: *See—*
Weber, Heinz, 3,580,262.
Teletype Corporation: *See—*
Hagstrom, Arthur A., 3,581,004.
Tenisons, Janis, to Tecumseh Products Company. Clutch adjustment tool. 3,580,116, Cl. 81-302.
Tenneco Chemicals, Inc.: *See—*
Farber, Elliott, 3,580,896.
Terao, Yoshikazu: *See—*
Wada, Yoshiyo; Yasutake, Katsuya; and Terao, Yoshikazu,3,580,446.
Ternent, George E., to Bendix-Westinghouse Automotive Air Brake Company. Dual circuit brake valve. 3,580,646, Cl. 303-52.
Terrell, Kyle E.; and Rester, Darryl C., to Amco International. Dozer for a farm tractor. 3,580,341, Cl. 172-805.
Testa, Emilio: *See—*
Cavalleri, Bruno; Bellasio, Elvio; and Testa, Emilio,3,580,932.
Tetra Pak AG: *See—*
Gustafson, Ake, 3,580,788.
Texaco Inc.: *See—*
Allen, Joseph C.; Bednarski, Valery N.; and Hall, Russell W., Jr., 3,580,335.
Furman, George R., 3,580,170.
Howlett, Donald L., 3,581,305.
Moorer, Henry D.; Lewis, Ralph M.; and Stokeld, Richard W., Jr., 3,580,962.
Texas Instruments, Incorporated: *See—*
Coad, Brian C., 3,579,772.
Cunningham, James A.; and Clark, Robert S., 3,581,161.
Frieling, Gerald H., Jr., 3,580,706.
Textron Inc.: *See—*
Chery, Walter V., 3,579,748.
Richards, William R., 3,580,647.
Zotter, John F., 3,580,590.
Textron Incorporated: *See—*
Matt, Richard J.; and Restelli, Ronald E., 3,579,780.
Thayer, Inc.: *See—*
Blais, Zoel W.; and Shaw, Harold F., 3,579,674.
Thelen, Edmund J.; and King, Robert H., to Packaging Corporation of America. Sanitary package. 3,580,466, Cl. 229-14.
Thew, Donald G., to Harnischfeger Corporation. Voltage splitter circuit. 3,581,104, Cl. 307-15.
Thibault, Jean-Jacques; and Boissin, Jean-Claude, to L'Air Liquide Societe Anonyme pour l'Etude et L'Exploitation des Procedes Georges Claude. Cryogenic pumping device for the creation of very high vacua. 3,579,998, Cl. 62-55.5
Thiel, Max; Kampe, Wolfgang; Stach, Kurt; Schaumann, Wolfgang; and Ribbentrop, Annemarie, to Boehringer Mannheim Gesellschaft mit beschrankter Haftung. P-alkoxy-piperidine-amides. 3,580,910, Cl. 260-240.
Thiel, Max; Stach, Kurt; Schaumann, Wolfgang; and Ribbentrop, Annemarie, to Boehringer Mannheim Gesellschaft mit beschrankter Haftung. Morphanthridine derivatives. 3,580,907, Cl. 260-239.
Thieme, Klaus-Dietrich: *See—*
Hermes, Heinz; Thieme, Klaus-Dietrich; Gatermann, Willi; Koerv, Peter; and Mehnert, Walter,3,581,185.
Thomas & Betts Corporation: *See—*
Cole, John M., 3,579,942.
Thomas, Carroll E.Artist's painting kit and tripod adapter therefor. 3,580,653, Cl. 312-231.
Thompson, Daniel T. Dough feeding apparatus. 3,580,385, Cl. 198-103.
Thompson, David R., to Rental Equipment Manufacturing Corporation. Sweeper. 3,579,702, Cl. 15-79.
Thompson, Douglas F.: *See—*
Hornak, John C.; and Thompson, Douglas F.,3,580,574.
Thompson, Harry W. Wrench having a locked adjustable position. 3,580,115, Cl. 81-165.
Thompson, Kenneth L., to Ye Dock Master, Inc. Floating wharf structure. 3,580,202, Cl. 114-0.5
Thompson, Kermith R. Remote control for fuel line shut-off. 3,580,353, Cl. 180-98.
Thorn Electrical Industries Limited: *See—*
Ranby, Peter Whitten; and Northwood, John Lenard, 3,580,738.
Tibbals, Howard C. Wood parquet block flooring unit. 3,579,941, Cl. 52-384.
Tidball, Robert A.; King, William M.; Bosley, Dewey R.; and Jennings, Charles M., to Baldwin-Lima-Hamilton Corporation. Apparatus for making large distillation plants. 3,580,816, Cl. 202-173.
Tierney, Robert R.: *See—*
Pope, Karl D., III; Morey, Thomas H.; and Tierney, Robert R.,3,579,681.
Tilly, Lorenz; and Bonner, Barrie, to Universal Alufolien Verfahren A.G., mesne. Die assembly. 3,580,041, Cl. 72-336.
Timofeev, Evgeny Petrovich: *See—*
Kononov, Mikhail Ivanovich; Krasheninnikov, Evgeny Anatolievich; Knyazev, Vladimir Fedorovich; Vasiliev, Evgeny Nikolaevich; Nasonov, Petr Yakovleivich; and Timofeev, Evgeny Petrovich,3,580,717.
Tindall, John M.: *See—*
Cannon, Lester E.; Tindall, John M.; and Taylor, Howard N.,3,580,476.
Tiona-Betts, Inc.: *See—*
Hanson, John R.; and Pierson, Karl B., 3,580,275.
Tjebbes, Horatius: *See—*
Eshuis, Jannes; and Tjebbes, Horatius,3,579,765.
Todt, Hans-Gunther; and Dahms, Wolfgang, to Schering AB. Bright silver electroplating. 3,580,821, Cl. 204-46.
Tohma, Takaaki: *See—*
Eguchi, Yasuhito; Fujiwara, Yoshio; and Tohma, Takaaki,3,580,992.
Tolf, Ingvar L.; Herzing, Vernon J.; Miller, Everett L.; and Lightfoot, George L., to General Foods Corporation. Apparatus for automatically stacking and inverting stacked units of sheet material. 3,580,402, Cl. 214-6.
Tomasello, Antonio: *See—*
Provost, Emile L.; and Tomasello, Antonio,3,580,474.
Tomiwa, Hiroshi, to Matsuo Electric Company, Limited. Method of making electronic components on comb like metal fingers and severing the fingers. 3,579,813, Cl. 29-570.
Tomiwa, Hiroshi: *See—*
Matsuo, Masao; and Tomiwa, Hiroshi,3,579,811.
Tomizawa, Kazuhiro, to Nittai Lease Company Ltd. Lower roller for endless tread for vehicle. 3,580,093, Cl. 74-230.3
Tontini, Remo: *See—*
Tanner, Carole S.; and Tontini, Remo,3,579,993.
Torkildsen, Robert A.: *See—*
Hovious, Thomas C.; and Torkildsen, Robert A.,3,580,741.
Torortseva, Tatiana Nikolaevna: *See—*
Naumenko, Viktor Arsenievich; Torortseva, Tatiana Nikolaevna; Penkova, Lidia Fedorovna; Vyselkov, Andrei Akimovich; and Rogova, Galina Ivanovna,3,580,742.
Torti, Luigi; and Bertelli, Guido. Method for bonding olefinic terpolymers to natural rubber and vulcanizates obtained thereby. 3,580,800, Cl. 161-243.
Toth, Louis, to Anchor Enterprises Corporation. Apparatus for the manufacture of composite structural elements. 3,579,724, Cl. 18-4.

Trans-Sonics, Inc.: *See—*
Westcott, Vernon C.; and Williams, Sidney B., 3,580,074.

Trapp, Gunther: *See—*
Mundlos, Eberhard; Mohr, Reinhard; Trapp, Gunther; and Hohmann, Kurt,3,580,900.

Traub, Hermann, Firma: *See—*
Werkmeister, Johannes; and Scheler, Holger, 3,580,418.

Traynor, Edward J., Jr., to Westinghouse Electric Corporation. Chemical radiusing conductor edges of flat cable. 3,580,737, Cl. 117-212.

Trefileries & Cableries de Bourg et du Havre: *See—*
Behar, Isaac, 3,580,746.

Trementozzi, Quirino A.: *See—*
Lee, Yoon Chai; and Trementozzi, Quirino A.,3,580,974.

Trepanier, Donald L., to Dow Chemical Company, The. Dibenzocycloheptene derivatives. 3,580,943, Cl. 260-453.

Tri-Ang Toys Limited: *See—*
Manning, Peter R. J., 3,580,426.

Trindle, John P., to Fairbanks, John P. Paste dispenser with interchangeable bagged cartridges. 3,580,429, Cl. 222-327.

Trinks, Walter; Netzer, Theodor Karl; Victora, Hans T.; Saurer, Hermann; and von Paulgerg, Heinrich, to Berliner Maschinenbau AG vorm. L. Schwartzkopff. Simulator for simulating the action of the pressure of a shock wave of a nuclear explosion. 3,580,048, Cl. 73-35.

Triplett, Lee, to Expando Products Company. Utility rod and mounting construction therefor. 3,580,397, Cl. 211-105.4

Triplex Safety Glass Company Limited: *See—*
Witherington-Perkins, Geoffrey Frank, 3,580,119.

Tripro, Inc.: *See—*
Dyal, Gilford E., 3,580,770.

Tron, Manfred: *See—*
Piazza, Gian-Franco; Streit, Rudolf; Ulrich, Martin; Laber, Werner; Burkert, Adolf; Tron, Manfred; and Waluga, Wolfgang,3,581,183.

Trosko, David P. Golf practice device. 3,580,584, Cl. 273-186.

Trusselle, William H., to Pneumatic Scale Corporation. Container filling machine. 3,580,298, Cl. 141-40.

TRW Inc.: *See—*
Guth, Eugene D.; Lewis, Jerry L.; and Van Nice, Leslie J., 3,580,961.
Hagan, Melvin A.; and Batista, Roy I., 3,579,808.
Jorgensen, Anker E.; and Oxley, Gerald K., 3,580,101.
Kelly, Franklin G., 3,581,303.
Selden, Ronald B., 3,581,284.

Tsapkin, Vadim Vasilievich: *See—*
Buzhinsky, Igor Mikhailovich; Zhabotinsky, Mark Efremovich; Rudnitsky, Jury Petrovich; Tsapkin, Vadim Vasilievich; Tsapkina, Irma Vyacheslavovna; and Ellert, Georgy Vladimirovich,3,580,859.

Tsapkina, Irma Vyacheslavovna: *See—*
Buzhinsky, Igor Mikhailovich; Zhabotinsky, Mark Efremovich; Rudnitsky, Jury Petrovich; Tsapkin, Vadim Vasilievich; Tsapkina, Irma Vyacheslavovna; and Ellert, Georgy Vladimirovich,3,580,859.

Tsuboi, Takashi; and Narita, Hiroshi, to Hitachi, Ltd. Control system of electric motor. 3,581,172, Cl. 318-259.

Tsuchiya, Noboru: *See—*
Kishi, Kanesuke; Tsuchiya, Noboru; and Shimura, Kazuo,3,581,012.

Tsujihata, Keiji; Shimada, Masatoshi; Asai, Hiromi; Sawada, Yasuhiro; and Ayuha, Zensaku, to Nippon Steel Corporation. Apparatus for operating a shaft furnace by detecting the falling speed of the charge. 3,581,070, Cl. 235-151.1

Tsurumi-Seikikosaku-Sho Co., Ltd., The: *See—*
Shimemura, Etsujiro; and Iwamiya, Masao, 3,581,238.

Tucker, Linwood G., to Koppers Company. Apparatus for simultaneously actuating standpipe lid, damper valve and steam valve. 3,580,815, Cl. 202-258.

Tumba, Sven O. G. Bilge pump for boats. 3,580,695, Cl. 417-330.

Turcus, Daniel, Jr.: *See—*
Kopsch, Paul J.; Turcus, Daniel, Jr.; and Ward, Donald F.,3,580,178.

Turk, Herbert: *See—*
Bauer, Karl; and Turk, Herbert,3,581,060.

Turner, Lyman H.: *See—*
Mallory, Donald G.; and Turner, Lyman H.,3,580,565.

Turner, Ralph: *See—*
Schacht, Louis L.; and Turner, Ralph,3,579,909.

Tusson, John R. Isolation of information. 3,579,854, Cl. 35-8.

Tuzaki, Takehiro: *See—*
Yamashita, Akio; and Tuzaki, Takehiro,3,581,233.

T. W. Maunfacturing Company, Inc.: *See—*
Hansen, Benth Preben; and Blitz, Saul, 3,579,725.

Tyrner, Joseph M., to Allied Chemical Corporation. Cam-controlled indexing device. 3,580,111, Cl. 74-817.

Uelzmann, Heinz; and Hidinger, David C., to General Tire & Rubber Company, The. Laminated products. 3,580,799, Cl. 161-186.

Uetrecht, Dale M., to Baidwin, D. H., Company. Diode keying system for electronic organ. 3,580,980, Cl. 84-1.22

Uhlig, Konrad: *See—*
Diehr, Hans Joachim; Merten, Rudolf; Piechota, Helmut; and Uhlig, Konrad,3,580,868.
Ware, Gordon K.; Diehr, Hans Joachim; Merten, Rudolf; Piechota, Helmut; and Uhlig, Konrad,3,580,890.

Ullman Devices Corporation: *See—*
Ullman, Robert, 3,579,677.

Ullman, Robert, to Ullman Devices Corporation. Flexible rotary compound tool. 3,579,677, Cl. 7-1.

Ullmann, Werner: *See—*
Panschow, Rudolf; Russbuelt, Herbert; Suhr, Volker; and Ullmann, Werner,3,581,045.

Ullmann, Werner; Tadini, Costantino; and Salim, Ehsan, to A.G. fur Industrielle Elektronik AGIE. Apparatus for the control and regulation of the work gap of an electroerosion machine. 3,581,043, Cl. 219-69.

Ulmer, Harold W.: *See—*
McKim, Jack D.; and Ulmer, Harold W.,3,581,307.

Ulrich, Martin: *See—*
Piazza, Gian-Franco; Streit, Rudolf; Ulrich, Martin; Laber, Werner; Burkert, Adolf; Tron, Manfred; and Waluga, Wolfgang,3,581,183.

Umbach, Hans: *See—*
Gawlick, Heinz; Stahlmann, Rudolf; and Umbach, Hans,3,580,179.

Umeda, Shinichi: *See—*
Kasahara, Shigekazu; Takahashi, Yuji; Suzuki, Takashi; Umeda, Shinichi; Adachi, Kazuo; and Fukuda, Yasuo,3,580,883.

Underwood, Ray L.; and Campbell, Thomas A. Motor vehicle loading and transporting device. 3,580,627, Cl. 296-1.

Ungerer, Heinz: *See—*
Eggstein, Giorgio; and Ungerer, Heinz,3,580,361.

Union Camp Corporation: *See—*
Burke, William R.; and Mc Call, Frank S., 3,580,471.

Union Carbide Corporation: *See—*
Manz, August F., 3,581,053.
Piper, John; and Leitten, Carl F., Jr., 3,581,159.

Uniroyal Englebert France S.A.: *See—*
Leblond, Jean, 3,580,782.

Uniroyal, Inc.: *See—*
Barnes, Gerald L.; Cichy, Raymond G.; and Adams, Gerald E., 3,580,767.
Hewitt, Eugene E., 3,580,793.

United Aircraft Corporation: *See—*
Comstock, David W.; and Campbell, Edwin R., 3,581,182.
Copley, Stephen M.; Giamei, Anthony F.; Hornbecker, Merton F.; and Kear, Bernard H., 3,580,324.
Dalton, Robert Barry, 3,580,059.
Mikolajczak, Alojzy A., 3,580,692.
Smith, David C., 3,581,230.
Svensen, Niels Alf, 3,580,210.
Urban, Louis A.; and Stearns, Charles F., 3,579,992.

United Electric Controls Company: *See—*
Reis, Robert D., 3,580,280.

United Engineering and Foundry Company: *See—*
Stone, Morris Denor; and Talbot, Howard Hubbell, 3,580,032.

United Kingdom Atomic Energy Authority: *See—*
Everson, Ivor; and George, Maurice William, 3,580,803.
Mobsby, Eric George Herbert, 3,580,076.
Williams, Albert Etheridge; and Linkison, William Simpson, 3,580,809.

United Kingdom of Great Britain and Northern Ireland, Minister of Technology in Her Britannic Majesty's Government of the:*See—*
Cheeseman, Ian Clifford: and Smith, Michael Charles George, 3,580,693.

United Shoe Machinery Corporation: *See—*
Clarke, Terence J.L.; and Evans, Ivor, 3,580,774.

United States Envelope Company: *See—*
Heywood, Vincent E.; Bushey, Donald H.; and Chapman, William A., Jr., 3,579,944.

United States of America
Agriculture: *See—*
Koch, Peter, 3,580,760.
Kramer, Harold A., 3,580,084.
Air Force: *See—*
Craig, Leonard J., 3,581,089.
Freiberg, Robert J., 3,581,231.
Grundy, Gary, 3,581,119.
Hudson, Kenneth C.; and Shashoua, Fred E., 3,580,151.
Inouye, Shingo; and Saul, George, 3,580,744.
Koestel, Alfred, 3,580,227.
Lavedan, Louis J., 3,581,242.
Plawner, Moshe L.; Vento, Vincent R.; and Gordon, Abraham, 3,580,363.
Setto, Joseph B., 3,580,636.
Army: *See—*
Arvidson, Paul W.; Park, William G.; and Williams, Keith S., 3,580,130.
Blevins, William V., 3,580,051.
Donadio, Vincent J.; and Anderson, Olavi F., 3,580,031.
Larson, Wesley S., 3,579,641.
Mon, George, 3,579,810.
Warren, Raymond W.; and Swartz, Elmer L., 3,580,069.
Zimmerman, John R., 3,580,131.
Atomic Energy Commission: *See—*
Allison, Robert W., Jr.; Brokloff, Robert W.; and Woodyard, John R., 3,580,822.
Brown, Leonard Carlton, 3,581,090.
Coleman, Charles; and Weaver, Boyd S., 3,580,705.

Johnson, John L.; Winsor, Niels K.; Dawson, John M.; Sinclair, Rolf M.; and Hosea, Joel C., 3,580,802.
Paget, John A., 3,580,804.
Health, Education and Welfare: *See—*
Crider, Walter Leslie, 3,580,680.
Interior: *See—*
Cadotte, John E.; and Francis, Peter S., 3,580,841.
Myers, John G.; and Field, Joseph H., 3,580,702.
Navy: *See—*
Brian, Michael, 3,581,031.
Cardwell, Lonnie D.; Esenwein, Fred T.; and Pierard, Arthur E., 3,580,049.
Kurisu, Albert G., 3,579,821.
Ohlstein, Paul E., 3,579,964.
Pederson, Arthur M., 3,581,069.
Wyatt, Robert D., 3,581,068.
Unitrode Corporation: *See—*
Dixon, Lloyd H., Jr., 3,581,117.
Universal Alufolien Verfahren A.G.: *See—*
Tilly, Lorenz; and Bonner, Barrie, 3,580,041.
Universal Oil Products Company: *See—*
Bloch, Herman S., 3,580,956.
Bloch, Herman S., 3,580,957.
Issott, John W.; Honkala, Harold E.; and Carraher, Delbert V., 3,580,037.
Pollitzer, Ernest L., 3,580,837.
Strittmater, David J.; and Voelker, Nicholas W., 3,580,065.
University of California, The Regents of the: *See—*
Hill, Fredrick L.; Gates, Lauren W.; and Colbert, William V., 3,579,968.
University of Utah, The: *See—*
Seegmiller, Ben L., 3,580,057.
Uno, Masaaki: *See—*
Abe, Katsuro; Kakinuma, Saburo; and Uno, Masaaki,3,579,986.
Upitnieks, Juris: *See—*
Leith, Emmett N.; and Upitnieks, Juris,3,580,655.
Upjohn Company, The: *See—*
Campbell, J. Allen; and Babcock, John C., 3,580,937.
Morozowich, Walter; and Sinkula, Anthony A., 3,580,904.
VanRheenen, Verlan H., 3,580,935.
Urban, Louis A.; and Stearns, Charles F., to United Aircraft Corporation. Power plant variable geometry control. 3,579,992, Cl. 60-239.
Urich, Daniel M., to Eveleth Taconite Company. Grate stripper for pelletizing machine. 3,580,553, Cl. 263-32.
Uridil, Joseph E., to Litton Systems, Inc. Process for treating sewage and other contaminated waters. 3,580,840, Cl. 210-11.
Urosevic, Milija: *See—*
Ivackovic, Nikola; and Urosevic, Milija,3,579,852.
URS Systems Corporation: *See—*
Orshansky, Elias, Jr., 3,580,107.
U.S. Divers: *See—*
Oroza, August, 3,580,250.
U.S. Philips Corporation: *See—*
Bongers, Piet Frans; and Zanmarchi, Giulio, 3,580,664.
Dahle, Hildegard, 3,580,845.
Dolbachian, Raymond; and Lefevre, Claude, 3,581,156.
Hendriks, Adrianus Anthonius Maria, 3,581,138.
Kooi, Else; and Van Der Meer, Aant Bouwe Daniel, 3,580,745.
Meijer, Albertus Cornelis, 3,581,091.
Potzl, Friedrich, 3,581,251.
Ushio Electric Inc.: *See—*
Ushio, Jiro, 3,581,133.
Ushio, Jiro, to Ushio Electric Inc. Gaseous discharge tube with metallically coated, electrode support portions. 3,581,133, Cl. 313-43.
USM Corporation: *See—*
Boot, Herbert W.; Parr, Leslie R.; and Fudger, Shirley L. W., 3,579,695.
Duffy, Richard J., 3,579,684.
Fichtner, Rudi; Ober, Horgern; and Klein, Wilhelm, 3,579,691.
Henshaw, James N., 3,580,457.
Imhof, Herman A., 3,579,694.
Muhlbach, Anton; and Lauckhardt, Gerhard, 3,579,692.
Utica Tool Company, Inc.: *See—*
Rozmus, Walter J., 3,580,114.
Valbona, Bruno M., to Dynamics Corporation of America. Liquidizer timer jogger with improved drive means including lost motion connection. 3,581,028, Cl. 200-38.
Valeron Corporation, The: *See—*
Milewski, Victor, 3,579,777.
Valmet Oy: *See—*
Heinonen, Martti, 3,580,039.
Vance, Robert G. Optical printer for motion picture film. 3,580,666, Cl. 352-90.
Van Dalen, Leonard, to Seaboard Fabricators, Inc., mesne. Screw and nut driver. 3,580,097, Cl. 74-421.
Van de Meerendonk, Gerardus Cornelis, to Nedschroef Octrooi Maatschappij N.V. Mechanism for ejecting workpieces from the matrices of upsetting machines. 3,579,685, Cl. 10-12.
Van Der Meer, Aant Bouwe Daniel: *See—*
Kooi, Else; and Van Der Meer, Aant Bouwe Daniel,3,580,745.
Van Der Wal, Jurjen. Variable pitch chain assembly. 3,580,383, Cl. 198-16.
Van Mullekom, Hubert P., to N.V. Machinefabriek L. te Strake. Device for localizing an excess in length in a thread. 3,580,444, Cl. 226-97.
Van Nice, Leslie J.: *See—*
Guth, Eugene D.; Lewis, Jerry L.; and Van Nice, Leslie J.,3,580,961.
VanRheenen, Verlan H., to Upjohn Company, The. Process for the preparation of 3-enol ethers, of 3- keto-Δ^4-6-(N-disubstituted)aminomethyl steroids. 3,580,935, Cl. 260-397.1
Van Scoy, Davis A., to Helmerich & Payne, Inc. Valve seal and system. 3,580,539, Cl. 251-159.
Van Staveren, Pieter, to Nederlandse Organisatie voor Toegepost-Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid, Handle en Verkeer. Pressure wave sustained vehicle. 3,580,356, Cl. 180-116.
Vanyi, Louis. Soldering apparatus. 3,580,462, Cl. 228-51.
Van Zurk, Robert, to Commissariat a l'Energie Atomique. Method of pulse-shaping and renewable-duration variable pulse-shaping circuit for the application of said method. 3,581,118, Cl. 307-267.
Varaxin, Alexei Ivanovich: *See—*
Khimich, Georgy Lukich; Niskovskikh, Vitaly Maximovich; Varaxin, Alexei Ivanovich; Gelfenbein, Evgeny Jukhimovich; Bykov, Leonid Alexandrovich; Litvinov, Anatoly Ivanovich; and Karlinsky, Stanislav Evgenievich,3,580,327.
Varian Associates: *See—*
Anderson, Weston A., 3,581,191.
Jepsen, Robert L., 3,581,195.
Morris, Dennis E., 3,581,145.
Williams, Norman H., 3,581,038.
Varo, Inc.: *See—*
Paquette, Raymond E., 3,581,140.
Vartanian, Edwin S., to Olin Mathieson Chemical Corporation. Buffer and delay mechanism for a firearm. 3,580,132, Cl. 89-130.
Vasiliev, Evgeny Nikolaevich: *See—*
Kononov, Mikhail Ivanovich; Krasheninnikov, Evgeny Anatolievich; Knyazev, Vladimir Fedorovich; Vasiliev, Evgeny Nikolaevich; Nasonov, Petr Yakovleivich; and Timofeev, Evgeny Petrovich,3,580,717.
Vasse, Jacques, to Societe Industriell Bull-General Electric (Societe Anonyme). Asynchronously controlled arrangement for feeding record cards. 3,580,566, Cl. 271-41.
Vaughan, Harry L., to Scripto, Inc. Fuel transfer system for cigarette lighters. 3,580,699, Cl. 431-321.
Vaughn, Reuben F.: *See—*
Plonsker, Harvey R.; Vaughn, Reuben F.; Lang, Felix C.; Aurich, Christoph W.; and Bowie, Philip A.,3,579,761.
Vazquez, Charles, to International Standard Electric Corporation. Shock resistant armature for electro- magnetic devices. 3,581,256, Cl. 335-271.
Veater, Donald J.; Hill, Sumner B.; and Ruffner, Lawrence J., to Erie Technological Products, Inc. Reinforced ceramic capacitor and method of making the same. 3,581,167, Cl. 317-261.
Veeco Instruments, Incorporated: *See—*
Greenberg, Sol; Rosen, Heinz; Weinberger, Richard; and Mongodin, Guy, 3,580,081.
Veeder Industries Inc.: *See—*
Bickford, John H., 3,580,421.
La Pointe, Lloyd J.; Voegelin, Howard J.; and Hoffman, Ernest G., 3,580,498.
Vento, Vincent R.: *See—*
Plawner, Moshe L.; Vento, Vincent R.; and Gordon, Abraham,3,580,363.
Vercillo, Peter A., to Continental Can Company. Closure. 3,580,201, Cl. 113-121.
Verdoodt, Marcel E.; and Michalke, Klaus A., to Chrysler Corporation. Tailgate window washer. 3,579,698, Cl. 15-250.1
Vereinigte Flugtechnische Werke Gesellschaft mit beschrankter Haftung fruher 'Weser' Flugzeugbau/ Fock-Wulf Heinkel-Flugzeugbau Hunefeldstrasse:*See—*
Bock, Gerhard; Riccius, Rolf; Weitkamp, Gunter; and Wolf, Bernhard, 3,580,531.
Vergara Ochoa, Alfonso. Method and apparatus for the transfer of images onto surfaces of hollow elastomeric articles. 3,580,772, Cl. 156-240.
Verhagen, Cornelis M. Stabilization pendulum system. 3,580,364, Cl. 188-87.
Vermes, Roy E., to Revco Inc. Counting apparatus. 3,580,145, Cl. 93-93.
Verschaeve, Henry O.: *See—*
Daniel, David W.; Verschaeve, Henry O.; and Mc Nabb, Warren C.,3,580,029.
Veszelik, Josef: *See—*
Knitter, Heinz; and Veszelik, Josef,3,581,271.
Victor Company of Japan, Limited: *See—*
Kosaka, Yoshiteru, 3,580,994.
Wada, Yoshiyo; Yasutake, Katsuya; and Terao, Yoshikazu, 3,580,446.
Victora, Hans T.: *See—*
Trinks, Walter; Netzer, Theodor Karl; Victora, Hans T.; Saurer, Hermann; and von Paulgerg, Heinrich,3,580,048.
Vignes, Roger: *See—*
Rouet, James; and Vignes, Roger,3,580,224.

Vignet, Paul: *See—*
de Villiers, Rocco Catoggio; Blachez, Loic; Jegou, Francois; Huyghe, Jean; and Vignet, Paul,3,580,818.

Vigorelli, Luigi. Embroidery stitching sewing machine. 3,580,199, Cl. 112-158.

Vincent, Robert E.: *See—*
Hoory, Sadok E.; Newman, Stanley F.; and Vincent, Robert E.,3,580,819.

Visher, Wilbur A., to Narco Scientific Industries, Inc. Electronic course line computer. 3,581,073, Cl. 235-150.26

Voegelin, Howard J.: *See—*
La Pointe, Lloyd J.; Voegelin, Howard J.; and Hoffman, Ernest G.,3,580,498.

Voelker, Nicholas W.: *See—*
Strittmater, David J.; and Voelker, Nicholas W.,3,580,065.

Vogel, Alvin R.; Moore, Douglas A.; Folan, Martin P.; and Buck, John R., to Northrop Corporation. Integrated system for reporting aircraft data. 3,581,014, Cl. 179-100.1

Voisin, Eugene; Raisin, Jean-Pierre; and Delair, Jean-Paul, to Centre Technique Industriel dit: Institut Textile de France. Device for controlling the delivery of thread to a knitting machine. 3,580,012, Cl. 66-55.

Volkl, Franz, OHG.: *See—*
Volkl, Franz, 3,580,596.

Volkl, Franz, to Volkl, Franz, OHG. Ski construction. 3,580,596, Cl. 280-11.13

Volkswagen Aktiengesellschaft: *See—*
Carbon, Erich; and Wagner, Wolfgang, 3,579,750.

Vollmann, Hansjorg: *See—*
Rauterkus, Karl Josef; and Vollmann, Hansjorg,3,580,871.

von Paulgerg, Heinrich: *See—*
Trinks, Walter; Netzer, Theodor Karl; Victora, Hans T.; Saurer, Hermann; and von Paulgerg, Heinrich,3,580,048.

Vorberg, Fritz, to Globotex AG. Method and apparatus for making hip stockings for panty hose and the like. 3,580,437, Cl. 223-75.

Vore, Herbert G.; and Bardsley, Donald E., to Improved Machinery Inc. Template assembly. 3,579,726, Cl. 18-5.

VSI Corporation: *See—*
Gearhart, Harlan G., 3,580,555.

Vyselkov, Andrei Akimovich: *See—*
Naumenko, Viktor Arsenievich; Torortseva, Tatiana Nikolaevna; Penkova, Lidia Fedorovna; Vyselkov, Andrei Akimovich; and Rogova, Galina Ivanovna,3,580,742.

Waagner-Biro Aktiengesellschaft: *See—*
Rasworschegg, Heinrich; Markow, Demeter; and Sandri, Alfred, 3,580,718.

Wada, Misao; and Soda, Kiyoshi, to Japan Aircraft Manufacturing Co., Ltd. Lift fan installation of vertical or short take-off and landing aircraft. 3,580,530, Cl. 244-54.

Wada, Yoshiyo; Yasutake, Katsuya; and Terao, Yoshikazu, to Victor Company of Japan, Limited. Magnetic tape movement initiation system. 3,580,446, Cl. 226-108.

Wagner Electric Corporation: *See—*
Falk, Edward J., 3,580,362.

Wagner, Millard C., to Kappel, Thomas Inc. Cargo loading and support system. 3,580,606, Cl. 280-179.

Wagner, Richard C., to Integral Process Systems, Inc. Chamber for food treating apparatus. 3,580,000, Cl. 62-77.

Wagner, Wilhelm: *See—*
Hoffmann, Heinrich; and Wagner, Wilhelm,3,580,230.

Wagner, Wolfgang: *See—*
Carbon, Erich; and Wagner, Wolfgang,3,579,750.

Waldo, Russell W., to Ideal Security Hardware Corporation. Lock with means concealing mounting fasteners. 3,580,017, Cl. 70-81.

Waldron, Paul H. R. Testing device for stretchable sheet materials under simultaneous distortion in three dimensions. 3,580,050, Cl. 73-37.

Walker, Norman Kenneth. Method for measuring the effects of stress on a man's performance of primary and secondary task. 3,579,865, Cl. 35-22.

Walker, William H. Locking mechanism for fluid type actuators. 3,580,140, Cl. 92-25.

Wallace, Jacob L., Jr., to Susquehanna Corporation, The. Duplex control circuit. 3,581,006, Cl. 178-58.

Wallace, Robert H., to Honeywell Inc. Servo motor driving and braking circuit. 3,581,181, Cl. 318-640.

Waller, Richard E.: *See—*
Williams, Charles A.; and Waller, Richard E.,3,579,793.

Walsh, Edward N.: *See—*
Price, Glenn R.; and Walsh, Edward N.,3,580,922.

Walters, Frank F., to Carrier Corporation. Apparatus for producing external integral fins for tubing. 3,580,028, Cl. 72-98.

Waltz, Marion D.; and Drake, Lewis A., to Youngstown Sheet and Tube Company, The. Rolling mill including gauge control. 3,580,022, Cl. 72-8.

Waltz, Richard B., to Burroughs Corporation. Automatic checkout apparatus. 3,581,074, Cl. 235-153.

Waluga, Wolfgang: *See—*
Piazza, Gian-Franco; Streit, Rudolf; Ulrich, Martin; Laber, Werner; Burkert, Adolf; Tron, Manfred; and Waluga, Wolfgang,3,581,183.

Wanger, Robert P.: *See—*
Holthenrichs, Philip D.; and Wanger, Robert P.,3,579,929.

Ward, Donald F.: *See—*
Kopsch, Paul J.; Turcus, Daniel, Jr.; and Ward, Donald F.,3,580,178.

Ward, John C., Jr.: *See—*
Arnould, Marcel M.; Ward, John C., Jr.; Ray, William Floyd; and Budzyn, Boleslaw L.,3,580,386.

Ward, Roderick K.: *See—*
Helrigel, Robert A.; Brownell, James R.; Ward, Roderick K.; and Keithley, Harry E.,3,580,558.

Ward, Ronald C.; and Allen, David T., to Telemation, Inc. Television broadcast synchronizing apparatus and method. 3,581,011, Cl. 178-69.5

Ware, Gordon K., to Chicago Roller Skate Company, The. Toe stop mounting for roller skates. 3,580,594, Cl. 280-11.2

Ware, Gordon K.; Diehr, Hans Joachim; Merten, Rudolf; Piechota, Helmut; and Uhlig, Konrad, to Chicago Roller Skate Company, The Farbenfabriken Bayer Aktiengesellschaft. Toe stop mounting for street roller skates Basic catalysts containing aromatic nuclei and araliphatically bound tertiary amino groups for the polymerization of NCO groups. 3,580,890, Cl. 260-77.5

Ware, Thomas G.: *See—*
Leiter, Robert Paul; and Ware, Thomas G.,3,579,663.

Wargo, William, to Ford Motor Company. Apparatus for annealing with accelerated cooling. 3,580,331, Cl. 165-48.

Wark, John D.; and Schladermundt, Peter. Aerial spinning disc. 3,580,580, Cl. 273-106.

Warner, Robert F., to Hayes Albion Corporation. Nondestructive, resonant testing apparatus with magnetic pickup. 3,580,056, Cl. 73-67.2

Warnett, Kenneth, to Electro-Lifts Limited. Linear electric motor. 3,581,127, Cl. 310-13.

Warren, Raymond W.; and Swartz, Elmer L., to United States of America, Army. Subsonic fluidic angle-of-attack sensor. 3,580,069, Cl. 73-180.

Warren, Robert C.; and Adams, Robert G. Automatic anti-jacknifing control for articulated vehicles. 3,580,610, Cl. 280-432.

Washi, Masao: *See—*
Hoshi, Hideo; Washi, Masao; and Yoshiki, Hiroshi,3,579,687.

Watanabe, Hideo; and Leonard, John E., to Beckman Instruments, Inc. Method and apparatus for in vivo potentiometeric measurements. 3,580,239, Cl. 128-2.1

Watanabe, Ryozi; and Kobayashi, Yutaka, to Hitachi, Ltd. Switching device for on-load tap changers or regulating transformers. 3,581,188, Cl. 323-43.5

Watari, Daisaku; and Morita, Tosio, to Seibu Denki Kogyo Kabushiki Kaisha. Continuously variable power supply for electric discharge machines capable of maintaining a constant ratio between amplitude and duration of discharge current. 3,581,044, Cl. 219-69.

Watson, John Thaxter; and Robinson, Kenneth, to Itek Corporation. Panoramic camera with forward image motion compensation by optical rotation of image. 3,580,150, Cl. 95-12.5

Watson, Lloyd M.; and Birchall, William R., to National Distillers and Chemical Corporation. Continuous process for preparing alkali metal dispersions and apparatus. 3,580,862, Cl. 252-309.

Way, Frederick L. Auto-chess apparatus and punched card therefor. 3,579,856, Cl. 35-8.

Wear, Robert L., to Minnesota Mining and Manufacturing Company. Ultraviolet light inhibitors. 3,580,927, Cl. 260-333.

Weaver, Boyd S.: *See—*
Coleman, Charles; and Weaver, Boyd S.,3,580,705.

Weaver, Eugene E. Universal yarn spool holder. 3,580,524, Cl. 242-129.7

Weaver, Robert L.; and Myrice, Frank D. Intensive care apparatus. 3,580,395, Cl. 211-87.

Webb, Samuel L.: *See—*
Scholle, Peter T.; and Webb, Samuel L.,3,580,158.

Webb, Thomas Alan; and Harvey, Jay A., to Balteau Electric Corporation. Video system for automatic production line inspection by X-ray. 3,580,997, Cl. 178-6.8

Webbere, Fred J.: *See—*
Eppich, Robert E.; and Webbere, Fred J.,3,580,328.

Weber & Scher Mfg. Co., Inc.: *See—*
Scher, Joseph William, 3,579,842.

Weber, Heinz, to Telesco Brophey Limited. Umbrella handle carrying strap assembly. 3,580,262, Cl. 135-20.

Weber, Lorenz, to Gebruder Boehringer Gesellschaft mit beschrankter Haftung. Apparatus in a machine tool for indicating displacement effected by a feed spindle. 3,580,216, Cl. 116-115.5

Weber, Rolf, to Siemens Aktiengesellschaft. Pulse generator for providing a plurality of pulses in determined phase positions. 3,581,115, Cl. 307-262.

Webster, James A., to Monsanto Research Company. Trisilylalkanes. 3,580,940, Cl. 260-448.2

Wech, Robert J.: *See—*
Richter, Herbert; Stock, David K.; Wech, Robert J.; Stock, David K.; and Wech, Robert J.,3,580,141.
Richter, Herbert; Stock, David K.; Wech, Robert J.; Stock, David K.; and Wech, Robert J.,3,580,141.
Stock, David K.; and Wech, Robert J.,3,580,142.

Weems, Sterling J.; and Mandil, Harry, to Westinghouse Electric Corporation. Pressure suppressing arrangement. 3,580,806, Cl. 176-37.

Weinberger, Aaron David, to Motorola, Inc. Reduced forward voltage drop rectifying circuit. 3,581,186, Cl. 321-43.

Weinberger, Richard: *See—*
Greenberg, Sol; Rosen, Heinz; Weinberger, Richard; and Mongodin, Guy,3,580,081.
Weiner, Sidney: *See—*
Ehrens, Henry; and Weiner, Sidney,3,580,269.
Weinstein, Berel, to Bio-Medical Sciences, Inc. Cardiographic apparatus with stylus control means. 3,580,241, Cl. 128-2.06
Weismann, Hans: *See—*
Schupp, Karl; and Weismann, Hans,3,581,034.
Weiss, Arthur J., to Continental Can Company, Inc. Molded pulp egg carton. 3,580,479, Cl. 229-44.
Weiss, Hubert L. Hinge structure for electric power distribution box or the like. 3,580,412, Cl. 220-35.
Weitkamp, Gunter: *See—*
Bock, Gerhard; Riccius, Rolf; Weitkamp, Gunter; and Wolf, Bernhard,3,580,531.
Weitz, Hans-Martin: *See—*
Fuerst, Ernst; and Weitz, Hans-Martin,3,580,839.
Welty, Richard O.: *See—*
Reid, Richard K.; and Welty, Richard O.,3,579,728.
Wenzel, Gunter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Welding gear for objects of thermoplastic material. 3,580,789, Cl. 156-497.
Werkmeister, Johannes; and Scheler, Holger, to Traub, Hermann, Firma. Apparatus for feeding rod stock and the like. 3,580,418, Cl. 221-275.
Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See—*
Apotheloz, Robert; Bigler, Hans-Ulrich; and Kessler, Rene, 3,580,174.
Suter, Xaver, 3,580,529.
West, Walter H., to Dow Chemical Company, The. Apparatus for variable parison forming. 3,579,733, Cl. 18-14.
Westcott, Vernon C.; and Williams, Sidney B., to Trans-Sonics, Inc. Temperature compensated liquid quantity gage. 3,580,074, Cl. 73-304.
Western Electric Company: *See—*
Mandonas, Nicholas J.; and Ryll, Paul A., 3,579,922.
Western Electric Company, Incorporated: *See—*
Craver, Edward H., 3,579,792.
Eisenmenger, Irving V., 3,581,108.
Western Manufacturing, Inc.: *See—*
Ehrlich, Stanley V., 3,580,517.
Western Union Telegraph Company, The: *See—*
Nord, Hans H., 3,581,120.
Westinghouse Electric Corporation: *See—*
Arnott, Edward G. F.; and Lewis, Daniel W., 3,581,137.
Elmy, Richard A., 3,579,851.
Goldberg, Newton N.; and Fergason, James L., 3,580,864.
Goldberg, Newton N., 3,580,865.
Haft, Harry H.; and Repsher, Robert W., 3,581,139.
Kemeny, George A.; and Wolf, Charles B., 3,580,977.
Ropp, Richard C., 3,580,861.
Simon, Alan J.; Johnson, Joseph E.; and O'Keeffe, Trence W., 3,580,749.
Traynor, Edward J., Jr., 3,580,737.
Weems, Sterling J.; and Mandil, Harry, 3,580,806.
Westra, Dan P.; and Siewert, John J., to Challenge Machinery Company, The. Cutter. 3,580,123, Cl. 83-380.
Wetter, Allan E., to Byrne Doors, Inc. Locking means for a vertically movable door. 3,579,910, Cl. 49-322.
Weyenberg, Lionel E. Housed resistor. 3,581,266, Cl. 338-253.
WHB-Anbaumobel von Poschinger K.G.: *See—*
Naske, Christoph, 3,580,535.
Wheatley, William Richard, to RCA Corporation. Optical semiconductor device. 3,581,162, Cl. 317-234.
Whirlpool Corporation: *See—*
Barnard, Walter C.; and Hodapp, Donald C., 3,580,008.
Hetland, Thomas E., 3,579,706.
Whistler Green Engineering Products Limited: *See—*
Whistler, Sidney, 3,579,707.
Whistler, Sidney, to Whistler Green Engineering Products Limited. Fastening devices for carpets. 3,579,707, Cl. 16-8.
Whitaker, Earl J.: *See—*
Greenspan, Lawrence E.; and Whitaker, Earl J.,3,581,287.
Whitaker, Willard H. Bath tub hoist device. 3,579,660, Cl. 4-185.
White Consolidated Industries, Inc.: *See—*
Snow, Lawrence E., 3,580,009.
White, Richard B., to Kent-Moore Corporation. Tank system tightness tester. 3,580,055, Cl. 73-49.2
Whited, Prentiss. Dressing tool method and means. 3,579,923, Cl. 51-209.
Whitfill, Donald L., to Continental Oil Company. Electrolytic decoloring of fertilizer solutions. 3,580,826, Cl. 204-131.
Whitney, Donald R., to General Motors Corporation. Wave interference silencing system. 3,580,357, Cl. 181-44.
Whymark, Arthur F.: *See—*
Starbuck, Leslie; and Whymark, Arthur F.,3,580,392.
Wichoud, Michel; and Engel, Jean-Pierre. Apparatus for storing and winding discontinuously and reversibly moving tape. 3,580,526, Cl. 242-190.
Wick, Paul: *See—*
Hoffmann, Wolfgang; and Wick, Paul,3,579,956.
Widl, Walter Herbert Ewin: *See—*
Mattsson, Orjan Mats; and Widl, Walter Herbert Ewin,3,581,075.
Wiehl, Frederick R.; and Wilson, Edmund B., III, to Singer Company, The. Aluminum pressed metal link for 600 class sewing machines. 3,580,106, Cl. 74-579.
Wiener Schwachstromwerke Gesellschaft m.b.H.: *See—*
Sacher, Franz, 3,581,252.
Wilcox, Waverly Hope: *See—*
Satterthwaite, James Glenn; and Wilcox, Waverly Hope,3,579,915.
Wilhelm, D F.; Miller, Peter S.; Bissell, D L.; and Lambroff, George M., to Owens-Illinois, Inc. Display terminal for computer monitored plant variables. 3,581,289, Cl. 340-172.5
Wilkinson, Jack E.; and Tahan, Victor G. Pre-tied suture and method of suturing. 3,580,256, Cl. 128-335.5
Williams, Albert Etheridge; and Linkison, William Simpson, to United Kingdom Atomic Energy Authority. Nuclear reactor fuel element with spaced reductions of diameter. 3,580,809, Cl. 176-76.
Williams, Charles A.; and Waller, Richard E., to Microdot Inc., mesne. Power tool for thread inserts. 3,579,793, Cl. 29-240.5
Williams, Keith S.: *See—*
Arvidson, Paul W.; Park, William G.; and Williams, Keith S.,3,580,130.
Williams, Norman H., to Varian Associates. Microwave applicator employing a broadside radiator in a conductive enclosure. 3,581,038, Cl. 219-10.
Williams, Sidney B.: *See—*
Westcott, Vernon C.; and Williams, Sidney B.,3,580,074.
Williamson, William Ian: *See—*
Corry, Alfred Reginald; Guest, Dorothy Joyce; and Williamson, William Ian,3,580,877.
Willis, David M., to Logan, Jonathan, Inc. Tensionless liquid treating apparatus and method. 3,579,679, Cl. 8-151.
Willison, Donald; and Depenti, Kenneth L., to Midland-Ross Corporation. Automatic trainline connector. 3,580,399, Cl. 213-76.
Willits, Samuel P.; and Mohan, William L., to Spartanics Limited. Pitch matching detecting and counting system. 3,581,067, Cl. 235-92.
Willox, J Hebden. Surge-deflecting cable terminator. 3,581,154, Cl. 317-61.5
Wilson, Alexander Ian, to Hille Engineering Company Limited, The. Rolling mills. 3,580,034, Cl. 72-237.
Wilson, David W.: *See—*
Shoemaker, William E.; and Wilson, David W.,3,581,198.
Wilson, Edmund B., III: *See—*
Wiehl, Frederick R.; and Wilson, Edmund B., III,3,580,106.
Wilson, Farris H., Jr., to Goodyear Tire & Rubber Company, The. Tetrahydroquinoxaline/aldehyde reaction process as polymer antiozonants. 3,580,884, Cl. 260-45.8
Wilson, Henry Allen. Training frame for use in learning how to ride a unicycle or walk on the hands. 3,580,569, Cl. 272-60.
Wilson, Leslie P.: *See—*
Dobell, Curzon; and Wilson, Leslie P.,3,580,461.
Wilson, Porter C. Flag football belt device. 3,579,745, Cl. 24-73.
Wilson, Raymond Michael Christopher, to Lucas, Joseph, (Industries) Limited. Apparatus for testing switching type voltage regulators by counting square wave pulses produced by the regulator. 3,581,205, Cl. 324-158.
Wilton Company: *See—*
Dunwoodie, Duane E., 3,581,222.
Windmoller & Holscher: *See—*
Richter, Herbert; Stock, David K.; Wech, Robert J.; Stock, David K.; and Wech, Robert J., 3,580,141.
Wingard, Henry S.: *See—*
De Torre, John; and Wingard, Henry S.,3,581,261.
Winsor Concepts: *See—*
Guyer, Reynolds W., Jr.; and Kruse, Wilbert A., 3,580,234.
Winsor, Niels K.: *See—*
Johnson, John L.; Winsor, Niels K.; Dawson, John M.; Sinclair, Rolf M.; and Hosea, Joel C.,3,580,802.
Winston, Rodney W.; and Witham, Peter M., to Moore Business Forms Inc. Pocket register. 3,580,614, Cl. 282-3.
Winter, John W.; and Harrison, Guy K., Jr., to Aviation Instrument Manufacturing Corporation, mesne. Attitude indicator. 3,579,847, Cl. 33-204.
Winthrop-Atkins Co., Inc.: *See—*
Nichols, Gordon E., 3,580,536.
Wisconsin Tissue Mills: *See—*
Asmuth, James E., 3,580,797.
Witham, Peter M.: *See—*
Winston, Rodney W.; and Witham, Peter M.,3,580,614.
Witherington-Perkins, Geoffrey Frank, to Triplex Safety Glass Company Limited. Maintaining sheets of glass in mutually spaced relationship when stacked together for transport or storage. 3,580,119, Cl. 83-23.
Withers, Harold. Leaf burner attachment for lawn mowers. 3,580,194, Cl. 110-18.
Witte, Richard F., to Reynolds Metals Company. Latch for reclosable carton and blank therefor. 3,580,482, Cl. 229-51.
Witthuhn, Johann: *See—*
Pollmeier, Heinz; and Witthuhn, Johann,3,580,790.
Wojcik, Thomas J.: *See—*
De Vries, Adrian J.; and Wojcik, Thomas J.,3,581,248.
Wolf, Bernhard: *See—*
Bock, Gerhard; Riccius, Rolf; Weitkamp, Gunter; and Wolf, Bernhard,3,580,531.

Wolf, Cecil R.; and Holland, John P., to Frantz Manufacturing Company. Method of joining sheets of rigid deformable material. 3,579,809, Cl. 29-509.
Wolf, Charles B.: *See—*
Kemeny, George A.; and Wolf, Charles B.,3,580,977.
Wolf, Milton; and Diebold, James L., to American Home Products Corporation. 1,2,3-4-Tetrahydrobenzo[b] [1,6] naphthyridine derivatives. 3,580,915, Cl. 260-286.
Wolfe, Henry S. Reflecting fishing float. 3,579,893, Cl. 43-17.5
Wolverine Brass Works: *See—*
De Vries, Robert W., 3,580,283.
Wong, Mei Goon: *See—*
Maure, Douglas R.; and Wong, Mei Goon,3,581,066.
Wood, Craig A. Ski-board. 3,579,682, Cl. 9-310.
Wood, Owen J.: *See—*
O'Mara, William H.; and Wood, Owen J.,3,579,770.
Woodard, Gerald F.: *See—*
Buehrle, William E., Jr.; and Woodard, Gerald F.,3,581,208.
Woodyard, John R.: *See—*
Allison, Robert W., Jr.; Brokloff, Robert W.; and Woodyard, John R.,3,580,822.
Worthy, Clive Reginald: *See—*
Worthy, Maurice Reginald; and Worthy, Clive Reginald,3,579,855.
Worthy, Maurice Reginald; and Worthy, Clive Reginald. Teaching machines. 3,579,855, Cl. 35-8.
Wrabetz, Voyta E.; and Banister, Ronald A., to Square D Company. Adjustable flexible cable force transmitting assembly. 3,580,102, Cl. 74-501.
Wrapping Machinery Company, Inc.: *See—*
Michels, Charles E., 3,579,949.
Wray, Dennis; and Johnson, Janet M., to Precision Processes (Textiles) Limited. Process for producing shrink-resistant wool by treatment with hypochlorous acid and cationic hydrophilic resinous condensation product. 3,580,701, Cl. 8-127.6
Wright, Allen C., to Haws Drinking Faucet Company. Push button valve. 3,580,542, Cl. 251-282.
Wright, Herbert Leslie. Sawing machine. 3,580,305, Cl. 143-37.
Wright, Roy E.: *See—*
Murray, William Bruce; and Wright, Roy E.,3,580,934.
Wyatt, Robert D., to United States of America, Navy, mesne. Counter controlled digital limit detector. 3,581,068, Cl. 235-92.
Wyrick, Leon M., to Chevron Research Company. Pneumatic system for air motor control. 3,580,538, Cl. 251-29.
Wyss, Escher, Limited: *See—*
Ruegg, Ernst, 3,580,393.
Xerox Corporation: *See—*
Bhagat, Gopal C., 3,580,670.
Hansen, Richard C.; Mahler, Charles J.; Soures, Nicholas M.; and Stickney, Thomas L., 3,581,000.
Lavander, Edward J., 3,580,671.
Mallory, Donald G.; and Turner, Lyman H., 3,580,565.
Sheridon, Nicholas K., 3,580,657.
Yang, Frank Y., 3,580,673.
Yaegashi, Toshio, to Hitachi, Ltd. Sleeved roll and method of making the same. 3,579,781, Cl. 29-148.4
Yamaguchi, Takeshi: *See—*
Kaneno, Saburo; Yamaguchi, Takeshi; and Yoshioka, Shunichi,3,581,084.
Yamamoto, Masao: *See—*
Yamamura, Katsumi; Miyasaka, Tsugumitsu; Hayashi, Shinichi; Yamamoto, Masao; and Matsubara, Yukio,3,580,820.
Yamamoto, Masatada. Safety escape bag. 3,580,358, Cl. 182-48.
Yamamura, Katsumi; Miyasaka, Tsugumitsu; Hayashi, Shinichi; Yamamoto, Masao; and Matsubara, Yukio, to Kabushiki Kaisha Suwa Seikosha, and Nisshin Kasai Kabushiki Kaisha. Palladium-nickel alloy plating bath. 3,580,820, Cl. 204-43.
Yamashita, Akio; and Tuzaki, Takehiro, to Matsushita Electric Industrial Co., Ltd. Solid state oscillator element. 3,581,233, Cl. 331-107.
Yang, Frank Y., to Xerox Corporation. Cleaning apparatus. 3,580,673, Cl. 355-15.
Yang, Meiling T., to Ethyl Corporation. Detergent formulations containing tetrahydrofuran 2,3,4,5-tetracarboxylic acid salts as builders. 3,580,852, Cl. 252-135.
Yashiro, Katsuji; and Naito, Hiroshi, to Otsukakoki Kabushiki Gaisha. Control lever for parking brake systems. 3,580,104, Cl. 74-535.
Yasutake, Katsuya: *See—*
Wada, Yoshiyo; Yasutake, Katsuya; and Terao, Yoshikazu,3,580,446.
Ye Dock Master, Inc.: *See—*
Thompson, Kenneth L., 3,580,202.
Yeo, Roland J.; and Colley, Jean E. Electrical contact breaker mechanisms with improved contact gap adjustment means. 3,581,025, Cl. 200-19.
Yoder, Robert N.: *See—*
Perkins, Carroll R.; Shaffstall, Everett L.; Gundersen, James L.; and Yoder, Robert N.,3,581,226.
Yopp, Robert S.; and Kraft, Melvin G., to Bunker-Ramo Corporation, The. Miniature connector. 3,581,272, Cl. 339-252.
Yoshii, Hiroshi: *See—*
Yoshimoto, Toshio; Narumiya, Tsuneaki; Kaneko, Seiya; Yoshii, Hiroshi; and Takamatsu, Tetsuya,3,580,897.
Yoshiki, Hiroshi: *See—*
Hoshi, Hideo; Washi, Masao; and Yoshiki, Hiroshi,3,579,687.
Yoshimoto, Toshio; Narumiya, Tsuneaki; Kaneko, Seiya; Yoshii, Hiroshi; and Takamatsu, Tetsuya, to Bridgestone Tire Company Limited. Process for producing hydrogenated hydrocarbon polymers. 3,580,897, Cl. 260-85.1
Yoshioka, Shunichi: *See—*
Kaneno, Saburo; Yamaguchi, Takeshi; and Yoshioka, Shunichi,3,581,084.
Young, Chauncey, to Riegel Paper Corporation. Membrane sealed carton. 3,580,483, Cl. 229-51.
Young, James Roger, to General Electric Company. Discharge gage for helium leak detector use. 3,580,052, Cl. 73-40.7
Young, Vernon V.: *See—*
Hidy, Phil H.; and Young, Vernon V.,3,580,929.
Youngblood, John O. Pump. 3,580,697, Cl. 417-557.
Youngman, Derek Henry: *See—*
Davies, Robert William; Hall, Charles Thomas; Hinchcliffe, Dennis; McCombie, Alan Keith; and Youngman, Derek Henry,3,579,952.
Youngstown Sheet and Tube Company: *See—*
Pryor, Dale H., 3,579,753.
Youngstown Sheet and Tube Company, The: *See—*
Waltz, Marion D.; and Drake, Lewis A., 3,580,022.
Yuen, Melville J. G. Swimming paddles. 3,580,213, Cl. 115-2.3
Zahn, Wolfgang; Nagel, Erlich; and Langer, Reinhold, to Agfa-Gevaert Aktiengsellschaft. Driving arrangement for single blade shutter for photographic apparatus. 3,580,155, Cl. 95-53.
Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See—*
Dach, Hansjorg, 3,580,112.
Hill, Franz, 3,580,109.
Zanmarchi, Giulio: *See—*
Bongers, Piet Frans; and Zanmarchi, Giulio,3,580,664.
Zaumseil, Dean R.: *See—*
Calud, Romeo T.; Hansbrough, David L.; and Zaumseil, Dean R.,3,581,169.
Zavialoff, Igor P.: *See—*
Miller, Harold A.; Nider, William K.; and Zavialoff, Igor P.,3,579,718.
Zayats, Iosif Lvovich; Barabashkin, Vladimir Pavlovich; Matveev, Boris Nikolaevich; and Shevakin, Jury Fedorovich. Method of rolling on a pilger mill. 3,580,036, Cl. 72-249.
Zbinden, Gerhard: *See—*
Gruenman, Vsevolod; Hoffer, Max; O'Brien, Jay Philip; Rachlin, Albert Israel; and Zbinden, Gerhard,3,580,949.
Zbrojovka, narodni podnik: *See—*
Pallich, Adolf, 3,579,889.
Zeigler, Robert O.: *See—*
Schirm, Helmut T.; and Zeigler, Robert O.,3,580,713.
Zelikovsky, Zinovy Ieremeevich: *See—*
Badinter, Efim Yakovlevich; Zelikovsky, Zinovy Ieremeevich; and Lazurevskaya, Irina Georgievna,3,581,262.
Zellner, Carl Naeher: *See—*
Kennedy, Daniel M., Jr.; and Zellner, Carl Naeher,3,580,973.
Zenith Radio Corporation: *See—*
De Vries, Adrian J.; and Wojcik, Thomas J., 3,581,248.
Zerba, Lawrence G.: *See—*
Fry, William H.; and Zerba, Lawrence G.,3,580,440.
Zercher, Richard C. Clampless fender mounted bracket. 3,580,441, Cl. 224-42.31
Zergenyi, Janos; and Habicht, Ernst, to Geigy Chemical Corporation. 5-(2-Methylenealkanoyl)-benzofuran 2- carboxylic acids. 3,580,931, Cl. 260-346.2
Zhabotinsky, Mark Efremovich: *See—*
Buzhinsky, Igor Mikhailovich; Zhabotinsky, Mark Efremovich; Rudnitsky, Jury Petrovich; Tsapkin, Vadim Vasilievich; Tsapkina, Irma Vyacheslavovna; and Ellert, Georgy Vladimirovich,3,580,859.
Zimmerman, Arie; Luksch, James A.; and Smith, Gerald D. Cable television program capacity enhancement. 3,581,209, Cl. 325-308.
Zimmerman, John R., to United States of America, Army, mesne. Antifeed back device. 3,580,131, Cl. 89-34.
Zink, Stanley C.; and Slane, Joseph J., to Black Clawson Company, The. Roll and anti-friction bearing assembly. 3,580,648, Cl. 308-207.
Zinser-Textilmaschinen Gesellschaft mit beschrankter Haftung: *See—*
Fetzer, Gustav; and Freytag, Gerhard, 3,579,973.
Zipser, Frederick S. Speed measuring device. 3,580,083, Cl. 73-432.
Zmatlik, Josef: *See—*
Jisa, Miloslav; Zmatlik, Josef; Mohelnicky, Josef; and Milichovsky, Bohumil,3,580,295.
Zofchak, James T.: *See—*
Maul, John A.; Zofchak, James T.; and Anderson, David D.,3,580,169.
Zolotarev, Petr Semenovich: *See—*
Bushuev, Vladimir Pavlovich; Gubin, Georgy Viktorovich; Zolotarev, Petr Semenovich; Sorokin, Vladimir Andreevich; Palamarchuk, Vladimir Ivanovich; and Dmitrenko, Viktor Makarovich,3,580,554.
Zotter, John F., to Textron Inc. Bearing seal construction. 3,580,590, Cl. 277-277.
'Zrak'-Preduzece Precizne mehanike i Optike:*See—*
Sarzinski, Stefan, 3,580,117.
Zubler, Edward G., to General Electric Company. Getter composition for electric lamps and similar devices. 3,580,856, Cl. 252-181.6
Zuccolo, Giorgio. Trellis uint for making of beams. 3,579,759, Cl. 25-131.6

Zueger, Karl J.; and Decker, Eugene J. Apparatus for inserting stick-like objects into comestible articles. 3,580,456, Cl. 227-100.
Zumstein, Fred R., to King-Seeley Thermos Co. Method of making double-walled plastic articles. 3,580,762, Cl. 156-73.
Zuppiger, Paul: *See*—
Bouladon, Gabriel; and Zuppiger, Paul,3,580,182.
Zyrotron Industries, Inc.: *See*—
Quinn, Frederic R., 3,580,500.
Zysman, Milton, to Convex Limited. Handle attaching apparatus and method. 3,579,773, Cl. 29-91.
Zysset, Karl. Hand squeezer for fruits and vegetables. 3,580,168, Cl. 100-234.

LIST OF REISSUE PATENTEES

TO WHOM

MAY 25, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Gingery, Wayne P., to Super-Drive Products, Inc. Dual splined shaft assembly for a clutch. Re. 27,126, 5–25–71, Cl. 192—70.13.

Steel, John F. Means for removing glare of a light beam. Re. 27,125, 5–25–71, Cl. 240—46.11.

LIST OF DESIGN PATENTEES

Adams, Gerlad M., and J. H. Frakes, Jr., to SCM Corp. Combined data keyboard entry and display unit. 220,824, 5–25–71, Cl. D26—5.

Althans, Richard K., and B. B. Gluestein. Television receiver escutcheon. 220,808, 5–25–71, Cl. D56—4.

Barden Corp., The: *See*—
Hedges, James E. 220,802.

Benson, Lee. Combined bottle and stand therefor. 220,792, 5–25–71, Cl. D9—13.

Bluestein, Bernard B.: *See*—
Althans, Richard K., and Bluestein. 220,808.

Braun Aktiengesellschaft: *See*—
Rams, Dieter. 220,801.

Carroll, Richard W., to U.S. Industries, Inc. Diffuser for a lighting fixture. 220,806, 5–25–71, Cl. D48—16.

Castedello, William, to The Kalart Co., Inc. Cassette for a sound slide projector. 220,818, 5–25–71, Cl. D26—14.

Consolidated Oil Co.: *See*—
Evins, Danny W. 220,804.

De Wan, Thomas E. Jacket. 220,822, 5–25–71, Cl. D2—189.

Dymo Industries, Inc.: *See*—
Penaluna, William A., and Yee. 220,797.

Edwards, Douglas F.: *See*—
Hedges, James, and Edwards. 220,802.

Epoch Co., Ltd.: *See*—
Matsumoto, Teruo. 220,796.

Evins, Danny W., to Consolidated Oil Co., Inc. Building. 220,804, 5–25–71, Cl. D13—1.

Frakes, James H., Jr.: *See*—
Adams, Gerald M., and Frakes. 220,824.

Harrison, Jeffrey F., to E. J. Riley Ltd. Billiard table or similar article. 220,812, 5–25–71, Cl. D34—3.

Hartsell, Hal C., Jr., and D. D. Tompkins. Support for a gasoline dispenser or the like. 220,827, 5–25–71, Cl. D52—2.

Hedges, James, and D. F. Edwards, to The Barden Corp. Work bench. 220,802, 5–25–71, Cl. D33—14.

Heller, Walter E., & Co.: *See*—
Sundberg, Carl W. 220,807.

Honeywell Inc.: *See*—
Quinn, Peter T. 220,793.

Hoover Co., The: *See*—
Krammes, Don C. 220,809.

Howe, Robert L., and N. C. Howe. Contoured pillow. 220,823, 5–25–71, Cl. D83—1.

Ivac Corp.: *See*—
Sato, Stephens N. 220,817.

Jerabek, Charles, to Vernitron Corp. Telephone coupler. 220,811, 5–25–71, Cl. D26—14.

Kalart Co. Inc., The: *See*—
Castedello, William. 220,818.

Katz, Maurice D. Portable radio. 220,821, 5–25–71, Cl. D56—4.

Kohner Bros., Inc.: *See*—
Kohner, Frank, and Stubbmann. 220,825.

Kohner, Frank, and A. Stubbmann, to Kohner Bros., Inc. Game board. 220,825, 5–25–71, Cl. D34—5.

Krammes, Don C., to The Hoover Co. Toaster. 220,809, 5–25–71, Cl. D81—10.

Krogh, Johannes C. Ice tray. 220,800, 5–25–71, Cl. D6—3.

Laurita, Joseph N. Luggage handle. 220,819, 5–25–71, Cl. D8—154.

Leonard, Jacques. Bottle. 220,798, 5–25–71, Cl. D9—71.

Le Roue, Lloyd J. Magnetic measuring tape. 220,810, 5–25–71, Cl. D52—1.

Litton Business Systems, Inc.: *See*—
Otto, Carl L. 220,813.
Otto, Carl L. 220,814.
Sklaroff, William B. 220,815.
Morelli, Joseph L. 220,816.

Misumoto, Teruo, to Epoch Co., Ltd. Educational device. 220,796, 5–25–71, Cl. D25—1.

Morelli, Joseph L., to Litton Business Systems, Inc. Typewriter. 220,816, 5–25–71, Cl. D64—11.

Otto, Carl L., to Litton Business Systems, Inc. Adding machine or the like. 220,813, 5–25–71, Cl. D64—11.

Otto, Carl L., to Litton Business Systems, Inc. Adding machine or the like. 220,814, 5–25–71, Cl. D64—11 .

Penaluna, William A., and M. Yee, to Dymo Industries, Inc. 220,797, 5–25–71, Cl. D64—10.

Quinn, Peter T., to Honeywell, Inc. Film strip adapter for photographic projector. 220,793, 5–25–71, Cl. D61—1.

Rams, Dieter, to Braun Aktiengesellschaft. Flashlight. 220,801, 5–25–71, Cl. D48—24.

Riley, E. J., Ltd.: *See*—
Harrison, Jeffrey F. 220,812.

Rowry, Eligah R. Radio receiving set. 220,794, 5–25–71, Cl. D56—4.

Ryden, John V., to Schering Corp. Inhalant dispenser. 220,805, 5–25–71, Cl. D83—1.

SCM Corp.: *See*—
Adams, Gerald M., and Frakes. 220,824.

Sato, Stephens N., to Invac Corp. Reflex measurement apparatus. 220,817, 5–25–71, Cl. R83—1.

Seefluth, Uwe C. Rocket toy. 220,820, 5–25–71, Cl. D34—15.

Scantlin Electronics, Inc.: *See*—
Segall, Ronald. 220,803.

Schering Corp.: *See*—
Ryden, John V. 220,805.

Segall, Ronald, to Scantlin Electronics, Inc. Sales terminal. 220,803, 5–25–71, Cl. D26—5.

Sklaroff, William B., to Litton Business Systems, Inc. Typewriter. 220,815, 5–25–71, Cl. D64—11.

Stangl, Johann M., to Stangl Pottery. Plate or similar article. 220,799. 5–25–71, Cl. D44—15.

Stangl Pottery: *See*—
Stangl, Johann M. 220,799.

Slater Electric, Inc.: *See*—
Slater, Herbert A. 220,795.

Slater, Herbert A., to Slater Electric, Inc. Single electrical outlet. 220,795, 5–25–71, Cl. D26—1.

Stubbmann, Albert: *See*—
Kohner, Frank, and Stubbmann. 220,825.

Sundberg, Carl W., to Walter E. Heller & Co. Remote control unit for an automatic phonograph. 220,807, 5–25–71, Cl. D26—13.

Tompkins, David D.: *See*—
Hartsell, Hal C., Jr., and Tompkins. 220,827.

U.S. Industries, Inc.: *See*—
Carroll, Richard W. 220,806.

Vaughn, Raymond R. Hand iron safety cradle. 220,826, 5–25–71, Cl. D49—6.

Vernitron Corp.: *See*—
Jerabek, Charles. 220,811.

Yee, Melvin: *See*—
Penaluna, William A., and Yee. 220,797.

CLASSIFICATION OF PATENTS

ISSUED MAY 25, 1971

NOTE.—First number, class; second number, subclass; third number, patent number

2— 3 : 3,579,637	18— 5 : 3,579,725	29—527.1 : 3,579,810
8 : 3,579,638	3,579,726	568 : 3,579,812
117 : 3,579,639	3,579,727	570 : 3,579,811
209 : 3,579,640	12 : 3,579,728	3,579,813
325 : 3,579,641	3,579,729	578 : 3,579,814
3— 1 : 3,579,642	3,579,730	580 : 3,579,815
3,579,643	13 : 3,579,731	583 : 3,579,816
3,579,644	14 : 3,579,732	588 : 3,579,817
3,579,645	3,579,733	596 : 3,579,818
4— 1 : 3,579,647	15 : 3,579,734	610 : 3,579,819
10 : 3,579,646	3,579,735	3,579,820
52 : 3,579,648	17 : 3,579,736	627 : 3,579,821
56 : 3,579,649	19 : 3,579,737	630 : 3,579,822
72 : 3,579,650	26 : 3,579,738	3,579,823
78 : 3,579,651	30 : 3,579,739	30— 43.92: 3,579,824
110 : 3,579,652	3,579,740	90.7 : 3,579,825
3,579,653	3,579,741	93 : 3,579,826
113 : 3,579,654	3,579,742	144 : 3,579,827
116 : 3,579,655	36 : 3,579,743	251 : 3,579,828
159 : 3,579,656	19— 97.5 : 3,579,744	32— 10 : 3,579,829
172.12: 3,579,657	23— 2 : 3,580,702	3,579,830
.19: 3,579,665	122 : 3,580,703	3,579,831
3,579,666	230 : 3,580,704	17 : 3,579,832
173 : 3,579,658	341 : 3,580,705	27 : 3,579,833
180 : 3,579,659	24— 73 : 3,579,745	43 : 3,579,834
181 : 3,579,667	131 : 3,579,746	58 : 3,579,835
185 : 3,579,660	201 : 3,579,747	33— 1 : 3,579,836
3,579,668	205.1 : 3,579,748	3 : 3,579,837
187 : 3,579,661	.14: 3,579,749	19 : 3,579,838
206 : 3,579,662	230 : 3,579,750	46 : 3,579,839
230 : 3,579,663	252 : 3,579,751	50 : 3,579,840
245 : 3,579,669	263 : 3,579,752	75 : 3,579,841
250 : 3,579,664	3,579,753	133 : 3,579,842
252 : 3,579,670	279 : 3,579,754	147 : 3,579,843
5— 62 : 3,579,671	25— 1 : 3,579,755	180 : 3,579,844
81 : 3,579,672	30 : 3,579,756	203.13: 3,579,845
94 : 3,579,673	45 : 3,579,757	204 : 3,579,846
3,579,674	118 : 3,579,758	3,579,847
343 : 3,579,675	131.6 : 3,579,759	34— 15 : 3,579,848
6— 2 : 3,579,676	28— 1.7 : 3,579,760	48 : 3,579,849
7— 1 : 3,579,677	19 : 3,579,761	57 : 3,579,850
14.1 : 3,579,678	71.3 : 3,579,762	82 : 3,579,851
8—127.6 : 3,580,701	72.11: 3,579,764	167 : 3,579,852
151 : 3,579,679	.16: 3,579,765	218 : 3,579,853
9— 1 : 3,579,680	.2 : 3,579,763	35— 8 : 3,579,854
310 : 3,579,681	74 : 3,579,766	3,579,855
3,579,682	29— 1.3 : 3,579,767	3,579,856
340 : 3,579,683	25.13: 3,579,768	3,579,862
10— 10 : 3,579,684	.42: 3,579,769	9 : 3,579,857
12 : 3,579,685	3,579,770	3,579,864
87 : 3,579,686	33 : 3,579,771	10.2 : 3,580,978
129 : 3,579,687	3,579,772	17 : 3,579,858
134 : 3,579,688	91 : 3,579,773	22 : 3,579,865
140 : 3,579,689	.1 : 3,579,774	27 : 3,579,859
12— 8.3 : 3,579,692	96 : 3,579,775	31 : 3,579,860
12.4 : 3,579,690	3,579,776	32 : 3,579,866
3,579,691	105 : 3,579,777	3,579,874
14.5 : 3,579,693	110 : 3,579,778	38 : 3,579,867
17 : 3,579,694	113 : 3,579,779	48 : 3,579,861
127 : 3,579,695	148.4 : 3,579,780	3,579,868
13— 6 : 3,580,976	3,579,781	3,579,869
18 : 3,580,977	3,579,782	3,579,870
14— 71 : 3,579,696	159 : 3,579,783	3,579,875
15— 3.1 : 3,579,697	196.3 : 3,580,706	66 : 3,579,871
21 : 3,579,700	200 : 3,579,784	37— 66 : 3,579,872
3,579,701	3,579,785	105 : 3,579,873
79 : 3,579,702	3,579,786	38— 2 : 3,579,876
215 : 3,579,704	203 : 3,579,787	12 : 3,579,877
250.1 : 3,579,698	3,579,789	40— 1.5 : 3,579,881
260 : 3,579,705	3,579,790	10 : 3,579,878
327 : 3,579,706	205 : 3,579,788	28 : 3,579,879
361 : 3,579,699	3,579,791	33 : 3,579,880
16— 8 : 3,579,707	208 : 3,579,792	107 : 3,579,882
52 : 3,579,708	237 : 3,579,794	3,579,883
65 : 3,579,709	240.5 : 3,579,793	110 : 3,579,884
93 : 3,579,710	252 : 3,579,795	145 : 3,579,885
114 : 3,579,711	263 : 3,579,796	152 : 3,579,886
141 : 3,579,712	267 : 3,579,797	.1 : 3,579,887
17— 1 : 3,579,713	401 : 3,579,798	356 : 3,579,888
11 : 3,579,714	416 : 3,579,799	42— 1 : 3,579,889
39 : 3,579,715	423 : 3,579,800	42 : 3,579,891
45 : 3,579,716	427 : 3,579,801	84 : 3,580,113
18— 1 : 3,579,717	432.2 : 3,579,802	43— 6 : 3,579,894
3,579,718	434 : 3,579,803	12 : 3,579,890
3,579,719	3,579,804	17.5 : 3,579,893
2.5 : 3,579,720	447 : 3,579,805	.6 : 3,579,895
.7 : 3,579,721	463 : 3,579,806	19 : 3,579,896
4 : 3,579,722	471.3 : 3,579,807	35 : 3,579,897
3,579,723	497.5 : 3,579,808	42.11: 3,579,892
3,579,724	509 : 3,579,809	44— 51 : 3,580,707
46— 7 : 3,579,898	60— 53 : 3,579,988	73—194 : 3,580,071
39 : 3,579,899	54.5 : 3,579,989	3,580,092
93 : 3,579,900	73 : 3,579,990	205 : 3,580,072
103 : 3,579,901	232 : 3,579,991	233 : 3,580,073
149 : 3,579,902	239 : 3,579,992	304 : 3,580,074
180 : 3,579,903	262 : 3,579,993	339 : 3,580,075
216 : 3,579,904	61— 1 : 3,579,994	3,580,076
244 : 3,579,905	13 : 3,579,995	343 : 3,580,077
3,579,906	66 : 3,579,996	344 : 3,580,078
47— 17 : 3,579,907	62— 55.5 : 3,579,997	358 : 3,580,079
45 : 3,579,908	3,579,998	384 : 3,580,080
49—252 : 3,579,909	56 : 3,579,999	399 : 3,580,081
322 : 3,579,910	77 : 3,580,000	406 : 3,580,082
394 : 3,579,934	101 : 3,580,001	421 : 3,580,084
51— 3 : 3,579,911	3,580,002	432 : 3,580,083
59 : 3,579,912	115 : 3,580,003	496 : 3,580,085
95 : 3,579,913	148 : 3,580,004	506 : 3,580,086
101 : 3,579,914	3,580,013	515 : 3,580,087
120 : 3,579,915	149 : 3,580,005	74— 1 : 3,580,088
131 : 3,579,916	196 : 3,580,006	49 : 3,580,089
3,579,917	345 : 3,580,007	96 : 3,580,090
148 : 3,579,918	347 : 3,580,008	107 : 3,580,091
163 : 3,579,919	353 : 3,580,009	230.3 : 3,580,093
164 : 3,579,920	64— 9 : 3,580,010	242.11: 3,580,094
3,579,921	27 : 3,580,011	409 : 3,580,095
165 : 3,579,922	65— 30 : 3,580,709	411.5 : 3,580,096
209 : 3,579,923	144 : 3,580,710	421 : 3,580,097
262 : 3,579,926	169 : 3,580,711	459 : 3,580,098
281 : 3,579,927	307 : 3,580,712	469 : 3,580,099
288 : 3,579,924	330 : 3,580,714	482 : 3,580,100
307 : 3,580,708	66— 55 : 3,580,012	493 : 3,580,101
315 : 3,579,933	68— 23.1 : 3,580,014	501 : 3,580,102
330 : 3,579,925	53 : 3,580,015	3,580,103
356 : 3,579,928	70— 68 : 3,580,016	535 : 3,580,104
52— 1 : 3,579,929	81 : 3,580,017	568 : 3,580,105
24 : 3,579,930	71— 28 : 3,580,715	579 : 3,580,106
83 : 3,579,932	76 : 3,580,716	687 : 3,580,107
126 : 3,579,935	72— 5 : 3,580,021	711 : 3,580,108
297 : 3,579,936	8 : 3,580,022	763 : 3,580,109
309 : 3,579,937	12 : 3,580,018	812 : 3,580,110
365 : 3,579,938	22 : 3,580,023	817 : 3,580,111
384 : 3,579,941	47 : 3,580,019	868 : 3,580,112
397 : 3,579,939	58 : 3,580,020	75— 37 : 3,580,717
542 : 3,579,940	77 : 3,580,024	60 : 3,580,718
615 : 3,579,942	84 : 3,580,025	81— 9.5 : 3,580,114
656 : 3,579,943	96 : 3,580,026	165 : 3,580,115
741 : 3,579,931	98 : 3,580,027	302 : 3,580,116
53— 3 : 3,579,944	3,580,028	82— 2 : 3,580,129
21 : 3,579,946	108 : 3,580,029	36 : 3,580,117
23 : 3,579,947	130 : 3,580,030	46 : 3,580,118
29 : 3,579,948	186 : 3,580,031	83— 23 : 3,580,119
33 : 3,579,949	199 : 3,580,032	98 : 3,580,120
37 : 3,579,950	205 : 3,580,033	107 : 3,580,121
3,579,952	237 : 3,580,034	108 : 3,580,122
55 : 3,579,951	243 : 3,580,035	380 : 3,580,123
59 : 3,579,953	249 : 3,580,036	84— 1.1 : 3,580,979
76 : 3,579,954	255 : 3,580,037	.22: 3,580,980
112 : 3,579,945	264 : 3,580,038	313 : 3,580,124
138 : 3,579,955	316 : 3,580,039	377 : 3,580,125
159 : 3,579,956	324 : 3,580,040	464 : 3,580,126
183 : 3,579,958	336 : 3,580,041	86— 24 : 3,580,127
184 : 3,579,960	339 : 3,580,042	31 : 3,580,128
190 : 3,579,957	402 : 3,580,043	89— 31 : 3,580,130
260 : 3,579,959	466 : 3,580,044	34 : 3,580,131
390 : 3,579,961	73— 3 : 3,580,045	130 : 3,580,132
3,579,962	5 : 3,580,046	90— 11 : 3,580,133
54— 24 : 3,579,963	17 : 3,580,047	3,580,135
56— 7 : 3,579,965	35 : 3,580,048	13 : 3,580,134
202 : 3,579,966	3,580,049	64 : 3,580,136
313 : 3,579,967	37 : 3,580,050	91— 50 : 3,580,137
327 : 3,579,968	40 : 3,580,051	277 : 3,580,138
328 : 3,579,969	.7 : 3,580,052	411 : 3,580,139
3,579,970	41 : 3,580,053	92— 25 : 3,580,140
330 : 3,579,971	49.2 : 3,580,054	93— 8 : 3,580,141
370 : 3,579,972	3,580,055	33 : 3,580,142
57— 88 : 3,579,973	67.2 : 3,580,056	53 : 3,580,143
58— 23 : 3,579,974	.6 : 3,580,057	3,580,144
3,579,975	.7 : 3,580,058	93 : 3,580,145
50 : 3,579,976	71.5 : 3,580,059	94 : 3,580,146
112 : 3,579,977	78 : 3,580,060	94— 50 : 3,580,147
60— 19 : 3,579,978	88 : 3,580,061	95— 10 : 3,580,148
3,579,979	105 : 3,580,062	11 : 3,580,149
24 : 3,579,980	118 : 3,580,063	12.20: 3,580,151
29 : 3,579,981	146 : 3,580,064	.5 : 3,580,150
36 : 3,579,982	150 : 3,580,065	31 : 3,580,152
39.71: 3,579,983	3,580,066	36 : 3,580,153
51 : 3,579,984	159 : 3,580,067	42 : 3,580,154
52 : 3,579,985	162 : 3,580,068	53 : 3,580,155
3,579,986	180 : 3,580,069	60 : 3,580,156
3,579,987	193 : 3,580,070	64 : 3,580,157

95– 89 : 3,580,158
100 : 3,580,159
96– 27 : 3,580,719
82 : 3,580,720
100 : 3,580,721
3,580,722
122 : 3,580,723
124 : 3,580,724
98–121 : 3,580,160
99– 7 : 3,580,725
78 : 3,580,726
81 : 3,580,727
3,580,728
128 : 3,580,729
243 : 3,580,161
3,580,162
310 : 3,580,163
339 : 3,580,164
351 : 3,580,165
100– 49 : 3,580,166
52 : 3,580,167
234 : 3,580,168
101–110 : 3,580,169
269 : 3,580,170
102– 28 : 3,580,171
37.2 : 3,580,173
48 : 3,580,172
56 : 3,580,174
67 : 3,580,175
75 : 3,580,176
79 : 3,580,177
92.2 : 3,580,178
.7 : 3,580,179
101 : 3,580,180
104– 23 : 3,580,181
25 : 3,580,182
111 : 3,580,183
165 : 3,580,184
105–366 : 3,580,185
369 : 3,580,186
3,580,187
107– 1 : 3,580,188
108– 3 : 3,580,189
58 : 3,580,190
152 : 3,580,191
3,580,192
110– 8 : 3,580,193
18 : 3,580,194
35 : 3,580,195
111– 1 : 3,580,196
112– 11 : 3,580,197
121.11: 3,580,198
158 : 3,580,199
113– 1 : 3,580,200
121 : 3,580,201
114– .5 : 3,580,202
39 : 3,580,203
67 : 3,580,204
125 : 3,580,205
144 : 3,580,206
3,580,207
163 : 3,580,208
218 : 3,580,209
115– .5 : 3,580,210
3,580,211
18 : 3,580,212
22.3 : 3,580,213
34 : 3,580,214
116– 87 : 3,580,215
115.5 : 3,580,216
169 : 3,580,217
117– 8 : 3,580,730
66 : 3,580,731
106 : 3,580,732
129 : 3,580,733
138.8 : 3,580,734
3,580,735
155 : 3,580,736
212 : 3,580,737
215 : 3,580,738
217 : 3,580,739
118–621 : 3,580,218
119– 1 : 3,580,219
14.01: 3,580,220
96 : 3,580,221
102 : 3,580,222
122– 1 : 3,580,223
16 : 3,580,224
20 : 3,580,225
235 : 3,580,226
406 : 3,580,227
123– 18 : 3,580,228
32 : 3,580,230
3,580,231
41.12: 3,580,229
119 : 3,580,232
3,580,233
124– 21 : 3,580,234
125– 3 : 3,580,235
126– 59.5 : 3,580,236
110 : 3,580,237
295 : 3,580,238
128– 2.06: 3,580,240
3,580,241
3,580,242
3,580,243

128– 2.1 : 3,580,239
25 : 3,580,244
33 : 3,580,245
36 : 3,580,246
66 : 3,580,247
89 : 3,580,248
194 : 3,580,249
203 : 3,580,250
220 : 3,580,251
268 : 3,580,254
276 : 3,580,255
290 : 3,580,252
3,580,253
335.5 : 3,580,256
130– 24 : 3,580,257
27 : 3,580,258
131–144 : 3,580,259
242 : 3,580,260
134–104 : 3,580,261
135– 20 : 3,580,262
136– 30 : 3,580,740
86 : 3,580,741
155 : 3,580,742
212 : 3,580,743
234 : 3,580,744
137– 2 : 3,580,263
81.5 : 3,580,264
3,580,265
3,580,266
203 : 3,580,267
246.22: 3,580,268
318 : 3,580,269
3,580,270
458 : 3,580,271
486 : 3,580,272
493 : 3,580,274
.2 : 3,580,273
516.29: 3,580,275
517 : 3,580,276
525.5 : 3,580,277
554 : 3,580,278
590 : 3,580,279
596.14: 3,580,280
.16: 3,580,281
608 : 3,580,282
624.2 : 3,580,285
625.18: 3,580,283
3,580,284
.68: 3,580,286
.69: 3,580,287
630.13: 3,580,288
138– 31 : 3,580,290
121 : 3,580,289
139–122 : 3,580,291
190 : 3,580,292
303 : 3,580,293
371 : 3,580,294
383 : 3,580,295
425 : 3,580,296
140–149 : 3,580,297
141– 40 : 3,580,298
59 : 3,580,299
65 : 3,580,300
131 : 3,580,301
141 : 3,580,302
173 : 3,580,303
244 : 3,580,304
143– 37 : 3,580,305
46 : 3,580,306
159 : 3,580,307
144– 3 : 3,580,308
11 : 3,580,309
34 : 3,580,310
309 : 3,580,311
145– 30 : 3,580,312
46 : 3,580,313
146– 3 : 3,580,314
79 : 3,580,315
148– 1.5 : 3,580,745
12 : 3,580,746
.7 : 3,580,747
26 : 3,580,748
187 : 3,580,749
149– 38 : 3,580,750
3,580,751
3,580,752
39 : 3,580,753
93 : 3,580,754
152–200 : 3,580,316
208 : 3,580,317
354 : 3,580,318
361 : 3,580,319
156– 3 : 3,580,755
49 : 3,580,756
58 : 3,580,758
64 : 3,580,760
72 : 3,580,761
73 : 3,580,762
78 : 3,580,763
83 : 3,580,764
110 : 3,580,765
123 : 3,580,766
138 : 3,580,767
156 : 3,580,768
206 : 3,580,769
216 : 3,580,770

156–235 : 3,580,771
240 : 3,580,772
244 : 3,580,773
247 : 3,580,774
3,580,775
275 : 3,580,776
278 : 3,580,777
299 : 3,580,778
380 : 3,580,780
384 : 3,580,779
397 : 3,580,781
415 : 3,580,782
426 : 3,580,783
429 : 3,580,784
468 : 3,580,785
475 : 3,580,786
477 : 3,580,787
497 : 3,580,788
3,580,789
504 : 3,580,757
521 : 3,580,790
540 : 3,580,791
546 : 3,580,792
579 : 3,580,793
581 : 3,580,794
583 : 3,580,795
157– 1.24: 3,580,320
160– 1 : 3,580,321
231 : 3,580,322
263 : 3,580,323
161–126 : 3,580,797
165 : 3,580,798
186 : 3,580,799
190 : 3,580,796
243 : 3,580,800
162–157 : 3,580,801
164– 60 : 3,580,324
82 : 3,580,325
200 : 3,580,326
280 : 3,580,327
283 : 3,580,328
366 : 3,580,329
165– 45 : 3,580,330
48 : 3,580,331
166–184 : 3,580,332
224 : 3,580,333
250 : 3,580,334
263 : 3,580,335
267 : 3,580,336
273 : 3,580,337
276 : 3,580,338
169– 2 : 3,580,339
172–126 : 3,580,340
805 : 3,580,341
173– 29 : 3,580,342
174– 10 : 3,579,863
35 : 3,580,981
45 : 3,580,982
47 : 3,580,983
48 : 3,580,984
68.5 : 3,580,985
73 : 3,580,986
120 : 3,580,987
153 : 3,580,988
176– 1 : 3,580,802
28 : 3,580,803
30 : 3,580,804
36 : 3,580,805
37 : 3,580,806
55 : 3,580,807
74 : 3,580,808
76 : 3,580,809
177–136 : 3,580,343
178– 5.1 : 3,580,989
.2 : 3,580,990
.4 : 3,580,991
3,581,007
6 : 3,580,993
.6 : 3,580,992
3,580,994
.7 : 3,580,995
.8 : 3,580,996
3,580,997
3,580,998
7.1 : 3,580,999
.6 : 3,581,000
3,581,001
.84: 3,581,002
17 : 3,581,003
33 : 3,581,004
42 : 3,581,005
58 : 3,581,006
63 : 3,581,008
69 : 3,581,009
.5 : 3,581,010
3,581,011
179– 1 : 3,581,012
15 : 3,581,016
3,581,017
22 : 3,581,018
41 : 3,581,013
3,581,019
84 : 3,581,020
90 : 3,581,021
100.1 : 3,581,014
.2 : 3,581,022

179–121 : 3,581,015
180– 8 : 3,580,344
9.2 : 3,580,345
19 : 3,580,346
22 : 3,580,347
25 : 3,580,348
27 : 3,580,349
44 : 3,580,350
53 : 3,580,351
79.2 : 3,580,352
98 : 3,580,353
104 : 3,580,354
105 : 3,580,355
116 : 3,580,356
181– 44 : 3,580,357
182– 48 : 3,580,358
49 : 3,580,359
187– 29 : 3,580,360
188– 72.4 : 3,580,361
73.4 : 3,580,362
74 : 3,580,363
87 : 3,580,364
196 : 3,580,365
3,580,366
206 : 3,580,367
264 : 3,580,368
3,580,369
192– 3 : 3,580,370
18 : 3,580,371
70.13: RE.27,126
105 : 3,580,372
193– 5 : 3,580,373
43 : 3,580,374
195– 29 : 3,580,810
100 : 3,580,811
143 : 3,580,812
198– 8 : 3,580,375
16 : 3,580,376
3,580,383
20 : 3,580,377
25 : 3,580,378
31 : 3,580,379
33 : 3,580,380
3,580,381
38 : 3,580,382
64 : 3,580,384
103 : 3,580,385
131 : 3,580,386
178 : 3,580,387
198 : 3,580,388
213 : 3,580,389
200– 11 : 3,581,023
3,581,024
19 : 3,581,025
33 : 3,581,027
38 : 3,581,026
3,581,028
3,581,029
46 : 3,581,030
50 : 3,581,032
61.47: 3,581,031
67 : 3,581,033
83 : 3,581,034
148 : 3,581,035
172 : 3,581,036
3,581,037
201– 39 : 3,580,813
202–173 : 3,580,816
234 : 3,580,814
258 : 3,580,815
203– 11 : 3,580,817
3,580,818
42 : 3,580,819
204– 14 : 3,580,828
43 : 3,580,820
46 : 3,580,821
58 : 3,580,822
60 : 3,580,823
95 : 3,580,824
112 : 3,580,825
131 : 3,580,826
143 : 3,580,827
159.17: 3,580,829
.24: 3,580,830
163 : 3,580,831
195 : 3,580,832
212 : 3,580,833
224 : 3,580,834
243 : 3,580,835
308 : 3,580,836
206– 46 : 3,580,390
208– 57 : 3,580,837
100 : 3,580,838
326 : 3,580,839
209– 73 : 3,580,391
74 : 3,580,392
210– 11 : 3,580,840
23 : 3,580,841
25 : 3,580,842
31 : 3,580,843
40 : 3,580,844
369 : 3,580,393
211– 60 : 3,580,394
87 : 3,580,395
88 : 3,580,396
105.4 : 3,580,397

211–148 : 3,580,398
213– 76 : 3,580,399
166 : 3,580,400
214– 1 : 3,580,401
6 : 3,580,402
38 : 3,580,403
85 : 3,580,404
135 : 3,580,405
137 : 3,580,406
152 : 3,580,407
302 : 3,580,408
215– 81 : 3,580,409
219– 7.5 : 3,581,040
10.55: 3,581,038
60 : 3,581,041
61 : 3,581,042
69 : 3,581,043
3,581,044
3,581,045
73 : 3,581,039
82 : 3,581,046
91 : 3,581,047
93 : 3,581,048
125 : 3,581,049
130 : 3,581,050
131 : 3,581,051
3,581,052
137 : 3,581,053
146 : 3,581,054
222 : 3,581,055
3,581,056
312 : 3,581,057
330 : 3,581,058
378 : 3,581,059
469 : 3,581,060
499 : 3,581,061
501 : 3,581,062
220– 1.5 : 3,580,410
4 : 3,580,411
35 : 3,580,412
83 : 3,580,413
86 : 3,580,414
221– 74 : 3,580,415
203 : 3,580,416
224 : 3,580,417
275 : 3,580,418
222– 1 : 3,580,419
3,580,420
5 : 3,579,964
27 : 3,580,421
57 : 3,580,422
81 : 3,580,423
89 : 3,580,424
129.1 : 3,580,425
177 : 3,580,426
215 : 3,580,427
241 : 3,580,428
327 : 3,580,429
394 : 3,580,430
402.1 : 3,580,431
.13: 3,580,432
440 : 3,580,433
461 : 3,580,434
504 : 3,580,435
223– 66 : 3,580,436
75 : 3,580,437
224– 4 : 3,580,438
42.1 : 3,580,439
.31: 3,580,440
3,580,441
225– 2 : 3,580,442
96.5 : 3,580,443
226– 97 : 3,580,444
3,580,445
108 : 3,580,446
119 : 3,580,447
127 : 3,580,448
150 : 3,580,449
171 : 3,580,450
173 : 3,580,451
191 : 3,580,452
195 : 3,580,453
198 : 3,580,454
227– 8 : 3,580,455
100 : 3,580,456
116 : 3,580,457
124 : 3,580,458
228– 2 : 3,580,459
4 : 3,580,460
.5 : 3,580,461
51 : 3,580,462
229– 2.5 : 3,580,463
5.6 : 3,580,464
14 : 3,580,465
3,580,466
3,580,467
3,580,468
3,580,469
15 : 3,580,470
3,580,471
17 : 3,580,472
20 : 3,580,474
21 : 3,580,473
34 : 3,580,475
37 : 3,580,476
39 : 3,580,477

229– 43 : 3,580,478
44 : 3,580,479
45 : 3,580,480
51 : 3,580,481
3,580,482
3,580,483
3,580,484
3,580,485
54 : 3,580,486
68 : 3,580,487
69 : 3,580,488
70 : 3,580,489
92.9 : 3,580,490
232– 35 : 3,580,491
233– 7 : 3,580,492
19 : 3,580,493
234– 6 : 3,580,494
115 : 3,580,495
235– 61.11: 3,581,064
.7 : 3,581,063
92 : 3,580,496
3,581,065
3,581,066
3,581,067
3,581,068
3,581,069
96 : 3,580,497
117 : 3,580,498
150.26: 3,581,073
151.1 : 3,581,070
.32: 3,581,071
152 : 3,581,072
153 : 3,581,074
3,581,075
154 : 3,581,076
184 : 3,581,077
193 : 3,581,078
201 : 3,580,499
236– 12 : 3,580,500
44 : 3,580,501
102 : 3,580,502
239– 25 : 3,580,503
70 : 3,580,504
168 : 3,580,505
230 : 3,580,506
233 : 3,580,507
241 : 3,580,508
302 : 3,580,509
327 : 3,580,510
419.5 : 3,580,511
432 : 3,580,512
460 : 3,580,513
521 : 3,580,514
536 : 3,580,515
240– 7.5 : 3,581,079
8.2 : 3,581,080
.3 : 3,581,081
46.11: RE.27,125
106 : 3,581,082
241– 4 : 3,580,537
22 : 3,580,519
25 : 3,580,516
186 : 3,580,517
193 : 3,580,518
299 : 3,580,520
242– 4 : 3,580,521
56 : 3,580,522
107.1 : 3,580,523
129.7 : 3,580,524
189 : 3,580,525
190 : 3,580,526
243– 38 : 3,580,527
244– 1 : 3,580,528
3.29: 3,580,529
54 : 3,580,530
102 : 3,580,531
246–246 : 3,581,083
249 : 3,581,084
248– 9 : 3,580,532
96 : 3,580,533
221 : 3,580,534
239 : 3,580,535
459 : 3,580,536
250– 43.5 : 3,581,085
49.5 : 3,581,086
51.5 : 3,581,087
55 : 3,581,088
83 : 3,581,089
.1 : 3,581,091
.3 : 3,581,090
3,581,092
84.5 : 3,581,093
105 : 3,581,094
106 : 3,581,095
3,581,096
209 : 3,581,097
213 : 3,581,098
216 : 3,581,099
3,581,100
218 : 3,581,101
227 : 3,581,102
231 : 3,581,103
251– 29 : 3,580,538
159 : 3,580,539
3,580,540
174 : 3,580,541

251–282 : 3,580,542	260–290 : 3,580,917	273– 95 : 3,580,578
252– 62.2 : 3,580,845	294.3 : 3,580,918	102.2 : 3,580,579
.9 : 3,580,846	295 : 3,580,919	106 : 3,580,580
71 : 3,580,759	297 : 3,580,920	138 : 3,580,581
75 : 3,580,847	302 : 3,580,921	139 : 3,580,582
78 : 3,580,848	304 : 3,580,922	176 : 3,580,583
3,580,849	306.7 : 3,580,923	186 : 3,580,584
99 : 3,580,850	307 : 3,580,924	274– 1 : 3,580,585
3,580,851	309 : 3,580,925	277– 3 : 3,580,586
135 : 3,580,852	315 : 3,580,926	3,580,587
152 : 3,580,853	333 : 3,580,927	32 : 3,580,588
181 : 3,580,854	340 : 3,580,928	140 : 3,580,589
3,580,855	343.2 : 3,580,929	227 : 3,580,590
.6 : 3,580,856	.6 : 3,580,930	280– 5.32: 3,580,591
182 : 3,580,857	346.2 : 3,580,931	8 : 3,580,592
3,580,858	3,580,932	11.13: 3,580,596
301.1 : 3,580,859	372 : 3,580,933	3,580,605
3,580,860	397 : 3,580,936	.2 : 3,580,594
.4 : 3,580,861	.1 : 3,580,935	3,580,595
309 : 3,580,862	.4 : 3,580,937	.35: 3,580,597
359 : 3,580,863	448 : 3,580,938	18 : 3,580,598
389 : 3,580,934	.2 : 3,580,939	34 : 3,580,599
408 : 3,580,864	3,580,940	36 : 3,580,600
3,580,865	3,580,941	47.13: 3,580,601
254–100 : 3,580,543	453 : 3,580,942	79.3 : 3,580,602
131 : 3,580,544	3,580,943	124 : 3,580,593
259– 3 : 3,580,545	456 : 3,580,944	150 : 3,580,603
4 : 3,580,546	464 : 3,580,945	154.5 : 3,580,604
23 : 3,580,547	465 : 3,580,946	179 : 3,580,606
95 : 3,580,548	486 : 3,580,947	301 : 3,580,607
102 : 3,580,549	487 : 3,580,948	405 : 3,580,608
107 : 3,580,550	534 : 3,580,950	3,580,609
152 : 3,580,551	557 : 3,580,967	432 : 3,580,610
260– 2 : 3,580,866	561 : 3,580,968	433 : 3,580,611
.5 : 3,580,867	570.5 : 3,580,949	492 : 3,580,612
3,580,868	580 : 3,580,951	500 : 3,580,613
3,580,869	584 : 3,580,952	282– 3 : 3,580,614
3,580,870	586 : 3,580,953	285– 81 : 3,580,615
17 : 3,580,871	3,580,954	229 : 3,580,616
.2 : 3,580,872	610 : 3,580,955	340 : 3,580,617
18 : 3,580,873	621 : 3,580,956	287– 20.924 3,580,618
22 : 3,580,874	3,580,970	53 : 3,580,619
23 : 3,580,875	653.5 : 3,580,957	54 : 3,580,620
29.4 : 3,580,876	666 : 3,580,969	101 : 3,580,621
.6 : 3,580,877	679 : 3,580,958	292–169 : 3,580,622
3,580,878	683 : 3,580,959	201 : 3,580,623
3,580,880	.3 : 3,580,960	216 : 3,580,624
.7 : 3,580,879	3,580,961	294– 59 : 3,580,625
30.4 : 3,580,881	.62: 3,580,962	67 : 3,580,626
41 : 3,580,882	825 : 3,580,971	296– 1 : 3,580,627
3,580,883	836 : 3,580,972	3,580,628
45.8 : 3,580,884	860 : 3,580,963	137 : 3,580,629
3,580,885	3,580,973	297–125 : 3,580,630
.9 : 3,580,886	871 : 3,580,964	155 : 3,580,631
47 : 3,580,887	873 : 3,580,965	157 : 3,580,632
3,580,888	876 : 3,580,974	184 : 3,580,633
3,580,889	878 : 3,580,975	313 : 3,580,634
72 : 3,580,891	898 : 3,580,966	355 : 3,580,635
77.5 : 3,580,890	263– 32 : 3,580,552	417 : 3,580,636
78.5 : 3,580,893	3,580,553	299– 14 : 3,580,637
79.5 : 3,580,894	33 : 3,580,554	25 : 3,580,638
83.7 : 3,580,895	266– 4 : 3,580,555	84 : 3,580,639
85.1 : 3,580,897	16 : 3,580,556	302– 2 : 3,580,640
87.1 : 3,580,896	267– 3 : 3,580,557	12 : 3,580,641
93.1 : 3,580,892	119 : 3,580,558	52 : 3,580,642
.7 : 3,580,898	126 : 3,580,559	53 : 3,580,643
94.3 : 3,580,899	153 : 3,580,560	59 : 3,580,644
149 : 3,580,900	269– 81 : 3,580,561	3,580,645
191 : 3,580,901	270– 54 : 3,580,562	303– 52 : 3,580,646
207 : 3,580,902	58 : 3,580,563	305– 35 : 3,580,647
209 : 3,580,903	271– 33 : 3,580,564	307– 15 : 3,581,104
210 : 3,580,904	39 : 3,580,565	116 : 3,581,105
.5 : 3,580,905	41 : 3,580,566	150 : 3,581,106
233.5 : 3,580,906	62 : 3,580,567	215 : 3,581,107
239 : 3,580,907	272– 60 : 3,580,568	3,581,108
.1 : 3,580,908	3,580,569	235 : 3,581,109
240 : 3,580,909	65 : 3,580,570	236 : 3,581,111
3,580,910	85 : 3,580,571	237 : 3,581,110
.65: 3,580,911	273– 54 : 3,580,572	241 : 3,581,112
247.5 : 3,580,912	55 : 3,580,573	245 : 3,581,113
260 : 3,580,913	3,580,574	252 : 3,581,114
268 : 3,580,914	58 : 3,580,575	3,581,117
285.5 : 3,580,916	70 : 3,580,576	262 : 3,581,115
286 : 3,580,915	82 : 3,580,577	264 : 3,581,116

307–267 : 3,581,118	324– 6 : 3,581,194	340– 25 : 3,581,275
288 : 3,581,119	33 : 3,581,195	52 : 3,581,276
290 : 3,581,120	60 : 3,581,196	58 : 3,581,277
293 : 3,581,121	61 : 3,581,197	62 : 3,581,278
295 : 3,581,122	73 : 3,581,198	146.1 : 3,581,279
304 : 3,581,123	77 : 3,581,192	.3 : 3,581,280
308 : 3,581,124	3,581,199	3,581,281
308–207 : 3,580,648	3,581,200	149 : 3,581,282
233 : 3,580,649	83 : 3,581,201	171 : 3,581,283
310– 8.1 : 3,581,125	96 : 3,581,202	172.5 : 3,581,284
9.1 : 3,581,126	3,581,203	3,581,285
13 : 3,581,127	130 : 3,581,204	3,581,286
21 : 3,581,128	158 : 3,581,205	3,581,287
25 : 3,581,129	169 : 3,581,206	3,581,288
3,581,130	325– 42 : 3,581,207	3,581,289
58 : 3,581,131	64 : 3,581,208	3,581,290
166 : 3,581,132	308 : 3,581,209	3,581,291
312– 7 : 3,580,650	411 : 3,581,210	173 : 3,581,292
39 : 3,580,651	451 : 3,581,211	174 : 3,581,293
208 : 3,580,652	328– 14 : 3,581,212	3,581,294
231 : 3,580,653	25 : 3,581,213	3,581,295
313– 43 : 3,581,133	55 : 3,581,214	3,581,296
64 : 3,581,134	56 : 3,581,215	.1 : 3,581,297
85 : 3,581,135	61 : 3,581,216	3,581,298
92 : 3,581,136	140 : 3,581,217	254 : 3,581,299
109 : 3,581,137	146 : 3,581,218	309.1 : 3,581,300
3,581,139	168 : 3,581,219	324 : 3,581,301
.5 : 3,581,138	329–126 : 3,581,220	3,581,302
110 : 3,581,140	330– 24 : 3,581,221	347 : 3,581,303
130 : 3,581,141	28 : 3,581,225	3,581,304
162 : 3,581,142	29 : 3,581,222	3,581,305
325 : 3,581,143	3,581,223	3,581,306
340 : 3,581,144	30 : 3,581,226	366 : 3,581,307
315– 30 : 3,581,145	99 : 3,581,224	380 : 3,581,308
84.5 : 3,581,147	331– 94.5 : 3,581,227	343– 6.8 : 3,581,309
180 : 3,581,146	3,581,228	7.7 : 3,581,310
227 : 3,581,148	3,581,229	781 : 3,581,311
316– 20 : 3,580,654	3,581,230	350– 3.5 : 3,580,655
317– 4 : 3,581,149	3,581,231	3,580,656
16 : 3,581,150	107 : 3,581,232	3,580,657
18 : 3,581,152	3,581,233	93 : 3,580,658
3,581,153	3,581,234	98 : 3,580,659
61.5 : 3,581,154	113 : 3,581,235	128 : 3,580,661
81 : 3,581,155	116 : 3,581,236	184 : 3,580,662
123 : 3,581,156	117 : 3,581,237	189 : 3,580,663
124 : 3,579,703	135 : 3,581,238	320 : 3,580,664
136 : 3,581,157	707 : 3,581,232	352– 78 : 3,580,665
230 : 3,581,158	332– 18 : 3,581,239	90 : 3,580,666
3,581,159	26 : 3,581,240	124 : 3,580,667
234 : 3,581,151	47 : 3,581,241	194 : 3,580,668
3,581,160	333– 1 : 3,581,242	353– 15 : 3,580,669
3,581,161	10 : 3,581,243	122 : 3,580,660
3,581,162	17 : 3,581,244	355– 3 : 3,580,670
3,581,163	22 : 3,581,245	3,580,671
3,581,164	24.1 : 3,581,246	3,580,672
235 : 3,581,165	30 : 3,581,247	15 : 3,580,673
3,581,166	31 : 3,581,250	28 : 3,580,674
261 : 3,581,167	70 : 3,581,249	50 : 3,580,675
318–211 : 3,581,168	72 : 3,581,248	86 : 3,580,676
214 : 3,581,169	83 : 3,581,251	110 : 3,580,677
3,581,170	334– 15 : 3,581,252	356– 43 : 3,580,678
227 : 3,581,171	335– 16 : 3,581,253	76 : 3,580,679
254 : 3,581,173	255 : 3,581,254	87 : 3,580,680
259 : 3,581,172	3,581,255	114 : 3,580,681
266 : 3,581,174	271 : 3,581,256	168 : 3,580,682
305 : 3,581,175	285 : 3,581,257	184 : 3,580,683
327 : 3,581,176	336– 90 : 3,581,259	226 : 3,580,684
330 : 3,581,177	173 : 3,581,258	244 : 3,580,685
443 : 3,581,178	192 : 3,581,260	246 : 3,580,686
452 : 3,581,179	337– 67 : 3,581,261	248 : 3,580,687
608 : 3,581,180	159 : 3,581,262	256 : 3,580,688
640 : 3,581,181	380 : 3,581,263	401–258 : 3,580,689
685 : 3,581,182	338– 20 : 3,581,264	408–178 : 3,580,690
696 : 3,581,183	174 : 3,581,265	415–155 : 3,580,691
321– 2 : 3,581,184	253 : 3,581,266	174 : 3,580,692
7 : 3,581,185	339– 8 : 3,581,267	416– 90 : 3,580,693
43 : 3,581,186	18 : 3,581,268	136 : 3,580,694
323– 17 : 3,581,187	94 : 3,581,269	417–330 : 3,580,695
43.5 : 3,581,188	160 : 3,581,270	515 : 3,580,696
3,581,189	176 : 3,581,271	557 : 3,580,697
324– .5 : 3,581,190	252 : 3,581,272	431–255 : 3,580,698
3,581,191	340– 7 : 3,581,273	321 : 3,580,699
3,581,193	15.5 : 3,581,274	344 : 3,580,700

CLASSIFICATION OF DESIGNS

D 2–189 : 220,822	D26– 1 : 220,795	D33– 14 : 220,802
D 8–154 : 220,819	5 : 220,803	D34– 3 : 220,812
D 9– 13 : 220,792	220,824	5 : 220,825
71 : 220,798	13 : 220,807	15 : 220,820
D13– 1 : 220,804	14 : 220,811	D44– 15 : 220,799
D25– 1 : 220,796	220,818	D48– 16 : 220,806

D48– 24 : 220,801	D56– 4 : 220,821	D64– 11 : 220,816
D49– 6 : 220,826	D61– 1 : 220,793	D67– 3 : 220,800
D52– 1 : 220,810	D64– 10 : 220,797	D81– 10 : 220,809
2 : 220,827	11 : 220,813	D83– 1 : 220,805
D56– 4 : 220,794	220,814	220,817
220,808	220,815	220,823

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,579,961	6 : 3,579,940	6 : 3,580,504	6 : 3,581,145	9 : 3,580,413	12 : 3,580,996
3,580,475	3,579,943	3,580,506	3,581,152	3,580,421	3,581,211
4 : 3,579,745	3,579,954	3,580,507	3,581,158	3,580,498	3,581,242
3,579,907	3,579,971	3,580,508	3,581,191	3,580,521	3,581,309
3,580,177	3,579,972	3,580,512	3,581,195	3,580,590	13 : 3,579,663
3,580,196	3,579,991	3,580,514	3,581,197	3,580,656	3,579,969
3,580,227	3,579,993	3,580,523	3,581,198	3,580,679	3,580,471
3,580,265	3,580,030	3,580,534	3,581,209	3,580,690	3,580,699
3,581,100	3,580,044	3,580,538	3,581,215	3,580,692	15 : 3,579,906
3,581,114	3,580,071	3,580,540	3,581,222	3,580,775	3,580,213
3,581,165	3,580,091	3,580,542	3,581,223	3,580,833	17 : 3,579,642
5 : 3,580,238	3,580,107	3,580,545	3,581,226	3,580,908	3,579,646
3,580,257	3,580,126	3,580,555	3,581,235	3,580,921	3,579,653
3,580,313	3,580,136	3,580,563	3,581,284	3,580,951	3,579,654
3,580,370	3,580,137	3,580,572	3,581,292	3,580,997	3,579,664
3,580,570	3,580,161	3,580,584	3,581,296	3,581,028	3,579,688
3,580,715	3,580,162	3,580,585	3,581,297	3,581,029	3,579,697
3,581,021	3,580,164	3,580,622	3,581,298	3,581,033	3,579,705
6 : 3,579,643	3,580,186	3,580,626	3,581,303	3,581,092	3,579,737
3,579,645	3,580,202	3,580,636	3,581,307	3,581,182	3,579,787
3,579,649	3,580,203	3,580,653	3,581,308	3,581,230	3,579,799
3,579,657	3,580,219	3,580,661	8 : 3,579,702	3,581,247	3,579,809
3,579,670	3,580,222	3,580,684	3,580,287	3,581,253	3,579,827
3,579,675	3,580,233	3,580,687	3,580,337	10 : 3,579,639	3,579,828
3,579,676	3,580,239	3,580,700	3,580,625	3,580,621	3,579,843
3,579,678	3,580,250	3,580,725	3,580,641	3,580,873	3,579,867
3,579,681	3,580,256	3,580,769	3,581,093	3,580,876	3,579,912
3,579,682	3,580,263	3,580,792	3,581,181	3,580,889	3,579,916
3,579,683	3,580,266	3,580,804	9 : 3,579,641	3,580,890	3,579,917
3,579,686	3,580,272	3,580,819	3,579,651	3,580,894	3,580,000
3,579,700	3,580,285	3,580,822	3,579,677	3,580,925	3,580,003
3,579,708	3,580,305	3,580,829	3,579,724	3,580,982	3,580,016
3,579,718	3,580,320	3,580,832	3,579,731	11 : 3,580,125	3,580,073
3,579,735	3,580,343	3,580,835	3,579,738	3,581,110	3,580,078
3,579,742	3,580,364	3,580,848	3,579,780	12 : Re.27,125	3,580,080
3,579,758	3,580,372	3,580,934	3,579,797	3,579,648	3,580,110
3,579,794	3,580,373	3,580,961	3,579,837	3,579,668	3,580,115
3,579,795	3,580,375	3,581,003	3,579,891	3,579,798	3,580,138
3,579,808	3,580,377	3,581,014	3,579,976	3,579,848	3,580,163
3,579,821	3,580,379	3,581,017	3,580,050	3,579,857	3,580,165
3,579,822	3,580,381	3,581,030	3,580,059	3,579,989	3,580,185
3,579,841	3,580,383	3,581,038	3,580,113	3,580,007	3,580,191
3,579,853	3,580,384	3,581,061	3,580,132	3,580,158	3,580,201
3,579,868	3,580,385	3,581,066	3,580,143	3,580,247	3,580,215
3,579,871	3,580,412	3,581,068	3,580,166	3,580,310	3,580,261
3,579,881	3,580,425	3,581,089	3,580,193	3,580,311	3,580,270
3,579,899	3,580,456	3,581,105	3,580,210	3,580,359	3,580,276
3,579,901	3,580,462	3,581,107	3,580,226	3,580,569	3,580,340
3,579,902	3,580,478	3,581,124	3,580,273	3,580,686	3,580,346
3,579,935	3,580,484	3,581,140	3,580,324	3,580,786	3,580,354

17 : 3,580,407
3,580,414
3,580,419
3,580,424
3,580,431
3,580,466
3,580,476
3,580,480
3,580,488
3,580,494
3,580,497
3,580,502
3,580,533
3,580,565
3,580,594
3,580,595
3,580,598
3,580,677
3,580,726
3,580,736
3,580,759
3,580,767
3,580,785
3,580,814
3,580,837
3,580,863
3,580,922
3,580,956
3,580,957
3,580,986
3,580,988
3,580,989
3,581,001
3,581,004
3,581,005
3,581,020
3,581,023
3,581,024
3,581,041
3,581,046
3,581,048
3,581,067
3,581,072
3,581,081
3,581,135
3,581,154
3,581,157
3,581,169
3,581,186
3,581,203
3,581,218
3,581,239
3,581,240
3,581,248
3,581,272
18 : 3,579,788
3,579,791
3,579,818
3,579,819
3,579,873
3,579,883
3,580,001
3,580,002
3,580,108
3,580,122
3,580,286
3,580,388
3,580,409
3,580,520
3,580,593
3,580,642
3,580,711
3,580,783
3,580,793
3,580,811
3,580,916
3,580,929
3,580,943
3,581,040
3,581,150
3,581,270
3,581,278
3,581,300
19 : Re.27,126
3,579,963
3,580,061
3,580,100
3,580,130
3,580,197
3,580,258
3,580,288
3,580,440
3,580,549
3,580,561
3,580,599
20 : 3,579,923
3,579,996
3,580,415
3,580,836
3,580,944
3,581,037
3,581,083
21 : 3,579,784
3,579,880
3,580,317
3,580,513
21 : 3,580,644
3,581,026
22 : 3,579,854
3,579,959
3,580,279
3,580,334
3,580,760
3,580,852
3,581,027
23 : 3,580,208
24 : 3,579,644
3,579,810
3,579,823
3,579,860
3,579,865
3,579,872
3,579,911
3,580,051
3,580,063
3,580,064
3,580,124
3,580,183
3,580,378
3,580,382
3,580,408
3,580,422
3,580,427
3,580,499
3,580,556
3,580,733
3,580,806
3,581,071
3,581,095
25 : 3,579,640
3,579,662
3,579,674
3,579,684
3,579,690
3,579,693
3,579,694
3,579,770
3,579,800
3,579,816
3,579,858
3,579,877
3,579,922
3,579,925
3,579,927
3,579,944
3,579,992
3,579,995
3,580,058
3,580,074
3,580,082
3,580,134
3,580,145
3,580,150
3,580,280
3,580,298
3,580,301
3,580,303
3,580,322
3,580,442
3,580,449
3,580,536
3,580,564
3,580,600
3,580,632
3,580,665
3,580,710
3,580,714
3,580,737
3,580,741
3,580,794
3,580,972
3,580,974
3,580,975
3,581,035
3,581,087
3,581,117
3,581,122
3,581,142
3,581,153
3,581,243
3,581,273
3,581,285
3,581,306
26 : 3,579,696
3,579,698
3,579,723
3,579,733
3,579,774
3,579,777
3,579,783
3,579,793
3,579,832
3,579,894
3,579,910
3,579,928
3,579,934
3,579,981
3,579,984
3,580,009
3,580,027
3,580,029
3,580,037
26 : 3,580,043
3,580,055
3,580,056
3,580,067
3,580,068
3,580,085
3,580,103
3,580,116
3,580,123
3,580,128
3,580,131
3,580,172
3,580,209
3,580,232
3,580,236
3,580,242
3,580,267
3,580,277
3,580,283
3,580,316
3,580,328
3,580,331
3,580,347
3,580,350
3,580,352
3,580,353
3,580,357
3,580,368
3,580,369
3,580,402
3,580,457
3,580,459
3,580,467
3,580,468
3,580,503
3,580,558
3,580,602
3,580,603
3,580,609
3,580,623
3,580,627
3,580,628
3,580,635
3,580,655
3,580,707
3,580,712
3,580,716
3,580,762
3,580,779
3,580,831
3,580,847
3,580,904
3,580,920
3,580,926
3,580,935
3,580,937
3,580,948
3,580,971
3,581,031
3,581,047
3,581,141
3,581,178
3,581,231
3,581,259
3,581,276
27 : 3,579,673
3,579,706
3,579,771
3,579,796
3,579,885
3,579,946
3,579,958
3,580,008
3,580,017
3,580,087
3,580,139
3,580,234
3,580,248
3,580,304
3,580,345
3,580,416
3,580,469
3,580,501
3,580,548
3,580,553
3,580,604
3,580,647
3,580,651
3,580,727
3,580,728
3,580,771
3,580,795
3,580,840
3,580,841
3,580,855
3,580,887
3,580,927
3,581,076
3,581,088
3,581,119
3,581,227
3,581,275
28 : 3,579,660
3,579,672
3,580,212
3,580,341
29 : 3,579,712
3,579,845
3,579,874
3,579,966
3,580,047
3,580,321
3,580,339
3,580,362
3,580,481
3,580,483
3,580,505
3,580,518
3,580,582
3,580,589
3,580,870
3,580,882
3,581,063
3,581,190
30 : 3,579,938
31 : 3,579,661
3,580,638
3,581,264
32 : 3,580,581
33 : 3,579,652
3,579,726
3,579,930
3,580,281
3,580,297
3,580,869
3,581,064
3,581,287
34 : 3,579,764
3,579,817
3,579,838
3,579,842
3,579,864
3,579,897
3,579,951
3,579,994
3,580,031
3,580,064
3,580,066
3,580,077
3,580,092
3,580,094
3,580,097
3,580,106
3,580,111
3,580,207
3,580,240
3,580,360
3,580,363
3,580,386
3,580,436
3,580,472
3,580,473
3,580,479
3,580,571
3,580,577
3,580,650
3,580,654
3,580,731
3,580,768
3,580,780
3,580,802
3,580,825
3,580,861
3,580,867
3,580,875
3,580,881
3,580,896
3,580,898
3,580,909
3,580,913
3,580,928
3,580,936
3,580,938
3,580,950
3,580,973
3,580,981
3,580,995
3,581,002
3,581,019
3,581,032
3,581,042
3,581,053
3,581,078
3,581,111
3,581,120
3,581,134
3,581,139
3,581,151
3,581,162
3,581,184
3,581,187
3,581,207
3,581,213
3,581,228
3,581,244
3,581,269
3,581,279
3,581,304
35 : 3,579,689
3,580,591
3,581,146
3,581,295
36 : 3,579,655
3,579,656
3,579,667
3,579,669
3,579,716
3,579,730
3,579,766
3,579,768
3,579,775
3,579,779
3,579,814
3,579,818
3,579,831
3,579,856
3,579,863
3,579,869
3,579,870
3,579,878
3,579,886
3,579,904
3,579,909
3,579,918
3,579,950
3,579,962
3,579,964
3,579,980
3,579,999
3,580,005
3,580,013
3,580,024
3,580,028
3,580,042
3,580,052
3,580,081
3,580,083
3,580,086
3,580,088
3,580,099
3,580,114
3,580,148
3,580,157
3,580,170
3,580,189
3,580,192
3,580,241
3,580,255
3,580,269
3,580,274
3,580,302
3,580,312
3,580,390
3,580,391
3,580,394
3,580,401
3,580,452
3,580,453
3,580,460
3,580,474
3,580,477
3,580,486
3,580,489
3,580,490
3,580,500
3,580,510
3,580,547
3,580,568
3,580,575
3,580,580
3,580,583
3,580,614
3,580,616
3,580,618
3,580,631
3,580,634
3,580,648
3,580,657
3,580,660
3,580,669
3,580,670
3,580,671
3,580,673
3,580,683
3,580,732
3,580,812
3,580,824
3,580,828
3,580,857
3,580,858
3,580,911
3,580,919
3,580,955
3,580,978
3,580,983
3,580,999
3,581,000
3,581,058
3,581,094
3,581,130
3,581,144
3,581,200
3,581,208
3,581,212
3,581,219
3,581,220
3,581,224
3,581,229
36 : 3,581,234
3,581,257
3,581,280
3,581,281
3,581,282
3,581,286
3,581,290
37 : 3,579,714
3,579,744
3,579,760
3,579,792
3,580,075
3,580,244
3,580,296
3,580,763
3,580,906
3,581,108
3,581,261
39 : 3,579,699
3,579,713
3,579,715
3,579,741
3,579,746
3,579,786
3,579,802
3,579,805
3,579,807
3,579,812
3,579,834
3,579,835
3,579,851
3,579,879
3,579,908
3,579,919
3,579,948
3,579,990
3,580,021
3,580,022
3,580,079
3,580,095
3,580,167
3,580,169
3,580,175
3,580,178
3,580,190
3,580,194
3,580,264
3,580,268
3,580,309
3,580,336
3,580,365
3,580,366
3,580,376
3,580,387
3,580,395
3,580,399
3,580,400
3,580,423
3,580,439
3,580,464
3,580,491
3,580,515
3,580,574
3,580,588
3,580,601
3,580,606
3,580,611
3,580,646
3,580,676
3,580,680
3,580,729
3,580,744
3,580,787
3,580,791
3,580,799
3,580,830
3,580,843
3,580,853
3,580,854
3,580,856
3,580,860
3,580,862
3,580,864
3,580,884
3,580,897
3,580,940
3,580,953
3,580,954
3,580,980
3,580,993
3,580,998
3,581,057
3,581,082
3,581,090
3,581,125
3,581,136
3,581,174
3,581,177
3,581,196
3,581,199
3,581,277
3,581,283
3,581,289
3,581,302
40 : 3,579,728
3,579,826

40 : 3,579,866
3,580,245
3,580,338
3,580,420
3,580,429
3,580,448
3,580,586
3,580,612
3,580,697
3,580,761
3,580,826
3,580,967
3,580,969
3,581,179
41 : 3,579,749
3,579,844
3,580,101
3,580,342
3,580,404
3,580,517
3,580,658
3,580,778
42 : 3,579,637
3,579,709
3,579,729
3,579,732
3,579,743
3,579,748
3,579,778
3,579,790
3,579,829
3,579,839
3,579,893
3,579,914
3,579,929
3,579,931
3,579,937
3,579,942
3,579,947
3,580,023
3,580,032

42 : 3,580,046
3,580,072
3,580,151
3,580,160
3,580,220
3,580,225
3,580,275
3,580,289
3,580,329
3,580,371
3,580,403
3,580,410
3,580,441
3,580,495
3,580,516
3,580,532
3,580,539
3,580,557
3,580,573
3,580,576
3,580,578
3,580,592
3,580,610
3,580,619
3,580,630
3,580,639
3,580,678
3,580,691
3,580,702
3,580,740
3,580,748
3,580,749
3,580,750
3,580,751
3,580,752
3,580,753
3,580,754
3,580,755
3,580,777
3,580,781
3,580,796

42 : 3,580,813
3,580,815
3,580,816
3,580,817
3,580,850
3,580,865
3,580,886
3,580,893
3,580,901
3,580,915
3,580,964
3,580,970
3,580,977
3,581,049
3,581,073
3,581,074
3,581,137
3,581,160
3,581,163
3,581,167
3,581,250
3,581,268
3,581,293
3,581,294
43 : 3,580,823
44 : 3,580,120
3,580,374
3,580,706
45 : 3,579,679
3,579,761
3,579,965
3,580,198
3,580,300
3,581,159
46 : 3,581,254
3,581,255
47 : 3,579,892
3,579,941
3,580,060
3,580,445
3,580,524

47 : 3,580,705
3,580,784
3,580,842
48 : 3,579,717
3,579,752
3,579,753
3,579,840
3,579,847
3,579,903
3,579,905
3,579,939
3,579,970
3,580,045
3,580,049
3,580,221
3,580,246
3,580,260
3,580,278
3,580,282
3,580,332
3,580,333
3,580,335
3,580,344
3,580,411
3,580,432
3,580,509
3,580,550
3,580,633
3,580,667
3,580,765
3,580,770
3,580,838
3,581,052
3,581,077
3,581,106
3,581,161
3,581,204
3,581,210
3,581,216
3,581,217
3,581,274

48 : 3,581,305
49 : 3,579,638
3,580,057
3,580,397
3,581,011
3,581,214
50 : 3,580,070
3,580,482
51 : 3,579,665
3,579,900
3,579,915
3,579,957
3,580,069
3,580,176
3,580,200
3,580,380
3,580,428
3,580,470
3,580,605
3,580,666
3,580,688
3,580,801
3,580,874
3,580,885
3,580,891
3,580,962
3,581,006
3,581,098
3,581,123
3,581,173
3,581,221
3,581,249
3,581,267
52 : 3,579,862
53 : 3,579,701
3,579,801
3,579,825
3,579,861
3,579,890
3,579,895
3,579,921

53 : 3,579,932
3,580,010
3,580,140
3,580,171
3,580,206
3,580,254
3,580,349
3,580,543
3,580,613
3,580,872
3,581,069
54 : 3,580,730
55 : 3,579,647
3,579,710
3,579,949
3,580,065
3,580,102
3,580,105
3,580,127
3,580,135
3,580,142
3,580,144
3,580,187
3,580,188
3,580,243
3,580,253
3,580,351
3,580,367
3,580,405
3,580,615
3,580,797
3,580,834
3,581,036
3,581,104
3,581,143
3,581,170
3,581,266
3,581,299
58 : 3,580,159
3,580,528

Design Patents

6 : 220,803
220,806
220,817
220,823
220,826

8 : 220,793
9 : 220,816
220,818
17 : 220,808
26 : 220,807

34 : 220,799
220,805
36 : 220,792
220,795
220,811

36 : 220,813
220,814
220,819
220,821

36 : 220,824
220,825
37 : 220,827
39 : 220,809

42 : 220,815
47 : 220,804
53 : 220,810
55 : 220,822

U.S. GOVERNMENT PRINTING OFFICE: 0—1971

U.S. DEPARTMENT OF COMMERCE
Maurice H. Stans, *Secretary*

PATENT OFFICE
William F. Schuyler, Jr., *Commissioner*